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COLORADO MASTER PLAN FOR COMMUNITY COLLEGES AND OCCUPATIONAL EDUCATION.

MANAGEMENT AND ECONOMICS RESEARCH INC.
COLORADO STATE BOARD FOR COMM. COLL.AND OCCUP.ED.

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A LONG-RANGE STATEWIDE MASTER PLAN FOR THE COORDINATED DEVELOPMENT OF COMMUNITY COLLEGES AND OCCUPATIONAL EDUCATION WAS DEVELOPED BY A CONSULTANT FIRM FROM DATA DERIVED FROM AUTHORITATIVE LITERATURE, COLLEGE ADMINISTRATORS, KNOWLEDGEABLE PERSONS THROUGHOUT THE STATE, NATIONAL COMMUNITY COLLEGE AND OCCUPATIONAL EDUCATION CONSULTANTS, AND STATE DIRECTORS OF THE RELATED AGENCIES. THE MASTER PLAN RESTS ON THE CONCEPT OF COMMUNITY COLLEGE AND OCCUPATIONAL EDUCATION AS ESSENTIAL AND IMPORTANT PARTS OF A TOTAL EDUCATIONAL SYSTEM. IT RECOMMENDS THAT THE STATE BE DIVIDED INTO SEVEN COMMUNITY COLLEGE ADMINISTRATIVE AND SEVEN OCCUPATIONAL PLANNING AND PROGRAMING AREAS, THAT THE ADMINISTRATIVE AREAS BE ESTABLISHED AS THE BASE FOR AREA VOCATIONAL SCHOOL SYSTEMS, AND THAT THE STATE BOARD FOR COMMUNITY COLLEGES AND OCCUPATIONAL EDUCATION BE RESPONSIBLE FOR ALL OCCUPATIONAL EDUCATION CURRICULUMS OFFERED IN STATE INSTITUTIONS OF HIGHER EDUCATION. RECOMMENDATIONS FOR MEETING LOCAL NEEDS AND PROVIDING STATE LEADERSHIP AND SPECIFIC PLANS FOR THE COMMUNITY COLLEGE OF DENVER AND EL PASO COMMUNITY COLLEGE ARE DISCUSSED. OTHER RELEVANT INFORMATION IS PRESENTED IN THE SECTIONS--(1) STRUCTURE AND FUNCTIONS OF THE STATE BOARD FOR COMMUNITY COLLEGES AND OCCUPATIONAL EDUCATION, (2) CURRENT STATUS OF COMMUNITY COLLEGE AND OCCUPATIONAL EDUCATION, (3) COLORADO POPULATION AND COMMUNITY COLLEGE ENROLLMENT PROJECTIONS, (4) DENVER POPULATION AND COMMUNITY COLLEGE PLANNING, (5) OCCUPATIONAL FORECASTS AND PROGRAM NEEDS, AND (6) FINANCING THE MASTER PLAN. EXPLANATIONS OF METHODOLOGY, 15 ILLUSTRATIONS, AND 57 TABLES OF DATA ARE INCLUDED. (JM)

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# COLORADO MASTER PLAN FOR COMMUNITY COLLEGES AND OCCUPATIONAL EDUCATION

*Prepared for*

STATE BOARD FOR COMMUNITY COLLEGES
AND OCCUPATIONAL EDUCATION
DENVER, COLORADO

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CONTENTS


DEFINITION OF TERMS . . . . . xiii

I INTRODUCTION . . . . . 1

Objective . . . . . 1
Method of Approach . . . . . 1
Staff . . . . . 3
Acknowledgments . . . . . 3

II THE MASTER PLAN . . . . . 5

Elements of the Master Plan 6

Organizing for Coordinated Action . . . . . 6
Meeting Local Needs . . . . . 9
Providing State Leadership . . . . . 13

Community College of Denver 16

Planning Factors . . . . . 16
Recommended Planning Policies for Denver Community College . . . . . 18
Site Selection Priorities . . . . . 19
Enrollment Projections . . . . . 22

El Paso Community College (Colorado Springs) 22

Financing the Master Plan 25

Discussion of Some Master Plan Elements 25

Roles of Area Educational Leaders . . . . . 25
Area Vocational School Systems . . . . . 26
Occupational Curricula in Public Higher Education . . 28
The Community College Center . . . . . 29
Authorization To Exceed State Support . . . . . 31
Providing State Leadership . . . . . 32

III STRUCTURE AND FUNCTIONS OF THE STATE BOARD FOR COMMUNITY COLLEGES AND OCCUPATIONAL EDUCATION . . . . 35

CONTENTS


IV CURRENT STATUS OF COMMUNITY COLLEGE AND OCCUPATIONAL EDUCATION . . . . . 43

Community College Education 43

Existing and Planned Community Colleges . . . . . 45
Community College Occupational Programs and Enrollments . . . . . 51
Physical Facilities . . . . . 55

State Colleges with Community College Types of Programs 56

Metropolitan State College . . . . . 56
Southern Colorado State College . . . . . 60

Occupational Education 63

Colorado Springs Program . . . . . 70
Boulder Valley Area Vocational-Technical Center . . . . 72
Emily Griffith Opportunity School . . . . . 72
Proprietary Schools . . . . . 73

Funding of Community College Education 75

V COLORADO POPULATION AND COMMUNITY COLLEGE ENROLLMENT PROJECTIONS . . . . . 81

Assumptions for Statewide Master Plan 81

Assumptions Relative to the State . . . . . 81
Assumptions Relative to Community College Day Enrollments . . . . . 82

Colorado Population 83

Distribution of Population . . . . . 83
Projected Population Growth and Distribution . . . . . 88

Community College Day Enrollments 88

Projections . . . . . 88
Distribution . . . . . 91

CONTENTS


IV CURRENT STATUS OF COMMUNITY COLLEGE AND OCCUPATIONAL EDUCATION . . . . . 43

Community College Education 43

Existing and Planned Community Colleges . . . . . 45
Community College Occupational Programs and Enrollments . . . . . 51
Physical Facilities . . . . . 55

State Colleges with Community College Types of Programs 56

Metropolitan State College . . . . . 56
Southern Colorado State College . . . . . 60

Occupational Education 63

Colorado Springs Program . . . . . 70
Boulder Valley Area Vocational-Technical Center . . . . 72
Emily Griffith Opportunity School . . . . . 72
Proprietary Schools . . . . . 73

Funding of Community College Education 75

V COLORADO POPULATION AND COMMUNITY COLLEGE ENROLLMENT PROJECTIONS . . . . . 81

Assumptions for Statewide Master Plan 81

Assumptions Relative to the State . . . . . 81
Assumptions Relative to Community College Day Enrollments . . . . . 82

Colorado Population 83

Distribution of Population . . . . . 83
Projected Population Growth and Distribution . . . . . 88

Community College Day Enrollments 88

Projections . . . . . 88
Distribution . . . . . 91

CONTENTS


VI DENVER POPULATION AND COMMUNITY COLLEGE PLANNING . . . . 97

Population Projections 97

Pattern of Population Growth . . . . . 99
Major Characteristics of Population . . . . . 99
Education . . . . . 101
Income . . . . . 102
Age Composition . . . . . 102
Racial and Ethnic Population . . . . . 103
Changing Distribution Patterns of Minority Groups . . 104

Projection of Denver Community College Enrollments 109

Distribution of Enrollments . . . . . 112
Plan A for Enrollment Distribution . . . . . 112
Plan B for Enrollment Distribution . . . . . 114
Priority of Occupational Programs . . . . . 114

VII OCCUPATIONAL FORECASTS AND PROGRAM NEEDS . . . . . 117

The Manpower Picture in Colorado 117

Pattern of Past Growth . . . . . 117
Anticipated Future Growth . . . . . 119
United States . . . . . 119
Colorado . . . . . 119
Occupational Analysis . . . . . 120
MERI Projection Method . . . . . 120
Other Analyses . . . . . 127
Colorado SMSAs . . . . . 129
New and Emerging Occupations . . . . . 131
Need for Manpower Information System in Colorado . . . . 132

Program Recommendations 134

Criteria for Making Program Recommendations . . . . . 134
Methodology for Analyzing Program Needs . . . . . 136
Recommended Location of Programs . . . . . 138
Recommended Programs . . . . . 138

VIII FINANCING THE MASTER PLAN . . . . . 147

Capital Fund Requirements 147

New Campuses and Centers . . . . . 147
Operating Capital Outlays . . . . . 152
Sources of Capital Funds . . . . . 152

CONTENTS

VIII Continued

Operating Costs and Revenues 153

Operating Costs . . . . . 154
Operating Revenues . . . . . 157

APPENDIXES . . . . . 161

## ILLUSTRATIONS


| | | |
|---|---|---|
| 1 | Proposed Community College Administrative Areas, State of Colorado | 7 |
| 2 | Proposed Denver Community College Campus Service Areas, First and Second Sites | 20 |
| 3 | Educational and Cultural Complex in Sparsely Settled Area Established Around Community College Center | 30 |
| 4 | Organizational Structure of Public Higher Education, State of Colorado | 37 |
| 5 | Present Organization of State Board for Community Colleges and Occupational Education | 39 |
| 6 | Colorado Community College Districts | 47 |
| 7 | Academic and Occupational Day Enrollments, Colorado Community Colleges | 52 |
| 8 | *Population by County, State of Colorado* | 86 |
| 9 | Population Change by County, State of Colorado | 87 |
| 10 | MERI Community College Day Enrollment Master Planning Guideline | 93 |
| 11 | Areas of High Density Population Distribution of Negro and Spanish Surname Residents in Denver County | 105 |
| 12 | Employment by Industry, State of Colorado | 123 |
| 13 | Nonagricultural Employment, Metropolitan Areas and State of Colorado | 125 |
| 14 | Preliminary Occupational Education Planning and Programming Areas, State of Colorado | 140 |
| 15 | Average Operating Expense per FTE Student, Colorado Community Colleges | 155 |
| C-1 | Map of Colorado County Census Sections | 169 |

## TABLES


| | | |
|---|---|---|
| 1 | Relation of Community College Enrollment to Population and Part-time Enrollment to Total Enrollment . . . | 44 |
| 2 | Opening Year and Enrollment in Junior Colleges . . . . . | 45 |
| 3 | Residence of Entering Freshmen, Colorado Community Colleges . . . . . | 49 |
| 4 | Student Charges for Colorado Community Colleges . . . . | 50 |
| 5 | Enrollment in Occupational Programs as a Percent of Day Enrollment in Colorado Community Colleges . . . . | 53 |
| 6 | Occupational Programs in Colorado Community Colleges . . | 54 |
| 7 | Summary of Information on Physical Facilities, Colorado Community Colleges . . . . . | 57 |
| 8 | Occupational Programs in Metropolitan State College . . | 59 |
| 9 | Occupational Programs in Southern Colorado State College . . . . . | 62 |
| 10 | Enrollment in Vocational-Technical Education in Colorado by Type and Level of Program . . . . . | 66 |
| 11 | Number of Colorado High Schools by Grade Structure and Size of Enrollment . . . . . | 68 |
| 12 | Type and Number of Federally Funded Secondary Vocational-Technical Programs in Colorado by Size of High School Enrollment . . . . . | 69 |
| 13 | Colorado General Fund Expenditures . . . . . | 76 |
| 14 | Current Operating Expenses per FTE Student and Source of Funds, Colorado Community Colleges . . . . . | 77 |
| 15 | Funding of Vocational-Technical Education in Colorado . . . . . | 78 |
| 16 | Expenditures for Vocational Education by Source of Funds, Colorado and All States . . . . . | 79 |
| 17 | Population Trends and Projections, State of Colorado . . | 84 |
| 18 | Births per Thousand Population, United States and Colorado . . . . . | 85 |
| 19 | Actual and Projected Population Distribution in Colorado by County Census Section and SMSA . . . . . | 89 |
| 20 | Comparison of Day Enrollment Projections for Colorado Community Colleges and MERI Master Planning Guideline . . . . . | 92 |

TABLES


| | | |
|---|---|---|
| 21 | Distribution of Projected Colorado Day Enrollments by Proposed Community College Administrative Areas . . . | 95 |
| 22 | Population Projections for Denver SMSA, by County . . . | 98 |
| 23 | Population Estimates of Selected Cities and Urban Centers in the Denver SMSA . . . . . | 100 |
| 24 | Ethnic Composition of Senior High Schools in Denver County . . . . . | 108 |
| 25 | Estimated Day Enrollments in the Denver Community College Administrative Area . . . . . | 111 |
| 26 | MERI Master Planning Guideline for Distribution of Day Enrollments in the Denver Community College Administrative Area (Plan A) . . . . . | 113 |
| 27 | MERI Master Planning Guideline for Distribution of Day Enrollments in the Denver Community College Administrative Area (Plan B) . . . . . | 115 |
| 28 | Employment Change and Distribution in Colorado and the United States by Industry . . . . . | 118 |
| 29 | Manpower Requirements for Selected Occupations to 1975, State of Colorado . . . . . | 126 |
| 30 | Manpower Requirements for Selected Occupations, Denver SMSA . . . . . | 128 |
| 31 | Wage and Salary Employment by Industry for Colorado and Its SMSAs . . . . . | 130 |
| 32 | Technicians That Could Be Employed Now in the United States . . . . . | 131 |
| 33 | Estimated Need for Trained Workers in the Electronics and Machine Trades Industries, State of Colorado . . . . | 133 |
| 34 | Vocational-Technical Education Program Needs, by Occupational Educational Planning Areas . . . . . | 143 |
| 35 | Capital Cost Estimates for New Community College Campuses . . . . . | 148 |
| 36 | Projected Capital Requirements for New Community College Campuses . . . . . | 150 |
| 37 | Projected Capital Requirements for New Equipment and Additions to Existing Campuses . . . . . | 152 |
| 38 | Projected Total Operating Expenses for Colorado Community Colleges . . . . . | 153 |

TABLES


| | | |
|---|---|---|
| 39 | Sources of Revenue for Community College Operation . . . | 154 |
| 40 | Projected Full-time Equivalent Students for Community Colleges, State of Colorado . . . . . | 158 |
| 41 | Projected Enrollment (Head Count) for Community Colleges, State of Colorado . . . . . | 158 |
| A-1 | Population and Projections by Proposed Community College Administrative Area and County . . . . . | 163 |
| A-2 | Estimated Number of 11th and 12th Graders by Community College Administrative Area . . . . . | 166 |
| A-3 | Estimated Number of 11th and 12th Graders Attending Area Vocational Schools by Community College Administrative Area . . . . . | 166 |
| B-1 | Comparison of Colorado Population Projections to 1990 by State and Federal Agencies . . . . . | 167 |
| D-1 | Proportion of Colorado Population in 18 to 21 Age Group . . . . . | 172 |
| D-2 | Participation Rate of Population in Selected Counties Where Community Colleges Are Located . . . . . | 173 |
| D-3 | Community College Day Enrollment Projections in Colorado . . . . . | 174 |
| D-4 | Day Enrollment Projections for Community Colleges in Colorado . . . . . | 176 |
| E-1 | Distribution of Community College Projected Day Enrollment in 1980 . . . . . | 181 |
| E-2 | Number of Actual and Projected High School Graduates in Colorado, by Proposed Community College Administrative Areas . . . . . | 182 |
| E-3 | Distribution of Projected Day Enrollments by Proposed Community College Administrative Areas . . . . . | 183 |
| F-1 | Comparison of Population Projections for Denver SMSA . . | 185 |
| G-1 | Cohort Progression from Birth to 3rd Grade, to 10th Grade, to High School Graduation to 13th Grade in Community College . . . . . | 190 |
| G-2 | Number of High School Graduates, by County, in Denver Community College Administrative Area . . . . . | 195 |
| G-3 | Estimated Number of Entering 13th Graders, by County, in Denver Community College Administrative Area . . . . | 196 |
| G-4 | Estimated Number of Students Attending Community College Programs in the Denver Area, by County . . . . . | 197 |

## Definition of Terms

### Community College

A two-year multipurpose college oriented toward meeting educational needs of residents in the area served and offering a diversified program which includes:

1. A current and comprehensive vocational-technical program for both full-time and part-time students. It may also serve as an area vocational school providing high school vocational-technical programs as well as post-secondary and adult programs.

2. Programs for the in-service training and retraining of workers.

3. The first two years of a four-year collegiate program, including pre-professional education.

4. General and liberal arts courses to meet cultural and social needs.

5. Effective student personnel services, including a strong program of counseling and guidance.

6. A program of community services designed to enrich living (e.g., lecture series, forums, musical events, art exhibits, recreational activities).

The terms community college and junior college are considered synonymous and used interchangeably in this report.

### Community College Center

An institution serving as a branch campus of a community college. Normally it should have at least 300 full-time equivalent (FTE) students enrolled but not enough students (e.g., 1,000 FTE or more) to provide a full-scale community college program. Ideally it should be part of an educational and cultural complex to supplement its facilities on a shared basis with other organizations.

Occupational education

A program of instruction below the baccalaureate level, including elementary and secondary grades, designed to acquaint persons with or prepare them for the world of work. It encompasses but is not limited to vocational-technical education.

Vocational-technical education

A program of instruction below the baccalaureate level which provides persons with skills and knowledge for specific employment opportunities.

# I INTRODUCTION

In the passage of the Community College and Occupational Education Act of 1967, the state of Colorado took a major step to facilitate the effective coordination of two closely related educational responsibilities. This development was the result of recommendations by the Colorado Commission on Higher Education, which is responsible for coordinating the functions of community colleges with those of other segments of public higher education in the state.

To move forward soundly and expeditiously according to a well conceived pattern, the new State Board for Community Colleges and Occupational Education, hereafter called the Board or State Board, considered it important at an early stage to have an approved long range master plan. Accordingly, the Board engaged the services of Management & Economics Research Incorporated (MERI) to conduct this study.

## Objective

The objective of the study is to recommend for the state of Colorado a statewide master plan for the coordinated development of community colleges and occupational education for the period 1968 through 1990. This plan will provide (1) recommendations on courses of action through 1980, with specific attention to the newly created Community College of Denver and El Paso Community College, and (2) more generalized guidelines for decision making through 1990.

## Method of Approach

1. Close liaison was established with the state director of community colleges and the state director of occupational education and maintained throughout the study. They and their staffs cooperated with staff of MERI in providing information significant to the study, arranged for interviews with other personnel at state and local levels, and kept the Board apprised of progress.

2. A library of pertinent information from authoritative sources was developed during the study. This information related to enrollment patterns; occupational trends and forecasts; and programs, facilities, organizational relationships, and plans. Published materials were supplemented by information on questionnaires completed by college administrations.

3. Interviews in depth were conducted with knowledgeable persons throughout the state. One group of the research team devoted attention specifically to interviewing persons in the Denver Metropolitan Area. Other team members traveled to all parts of the state for the purpose of visiting local junior colleges and, in addition, Southern Colorado State College, Adams State College, Fort Lewis College, and Colorado State University. In the Denver Metropolitan Area, visits were made to Metropolitan State College, Arapahoe Junior College, Emily Griffith Opportunity School, and Boulder Valley Area Vocational-Technical Center. At each institution key members of the administration were interviewed, and in each locality conferences were held with other persons who knew the community and its needs well. Members of the research team also had an opportunity to meet with the college councils of the Community College of Denver and El Paso Community College.

4. The information derived from these data gathering efforts was analyzed and the conceptual outline of the master plan evolved. These concepts were submitted to a panel of four national consultants--two from the community college field and two from occupational education--who met with the MERI staff, the state director of community colleges, and the state director of occupational education, at the MERI offices in the Stanford Professional Center. At the conclusion of the three-day conference, there was substantial concurrence on the framework of the master plan; each national consultant submitted a memorandum elaborating upon his views.

5. An oral presentation was made to the State Board, at which time a discussion of the study provided an opportunity for the clarification of key concepts of the master plan prior to the preparation of this final written report.

## Staff

Members of the MERI research team were Dr. George W. Ebey, vice president for education and manpower studies, who was project director; Max R. Tadlock, director of educational research and planning, who gave special attention to the Denver Metropolitan Area; Fred J. Carvell, education and manpower specialist, who was responsible for all general and student population projections and the demographic information relating to the Denver Metropolitan Area; Theodore W. Vian, education and manpower consultant, who developed occupational manpower forecasts and identified critical occupational education needs; Arthur E. Hall, financial analyst, who projected funding requirements for implementation of the master plan; Dr. Henry T. Tyler, senior education and manpower consultant, who studied legislative provisions and financial data; Randolph Brewster, research analyst, who organized the information system on the project and visited most of the institutions outside the Denver Metropolitan Area; and Miss Niki Testa, research assistant, who tabulated much of the information for analysis and interpretation. The national consultants to the study were Dr. Walter M. Arnold, technical education consultant and former assistant commissioner for vocational and technical education, U.S. Office of Education; Dr. Joseph P. Cosand, president, The Junior College District of St. Louis; Dr. Robert E. Taylor, director, The Center for Research and Leadership Development in Vocational and Technical Education, The Ohio State University; and Dr. James L. Wattenbarger, director, Institute of Higher Education, University of Florida.

## Acknowledgments

Appreciation is expressed to the many representatives of business, industry, labor, government, education, and other professions who cooperated on this study. They were most gracious in providing time freely from their busy schedules to give information, advice, and counsel.

Special acknowledgments are extended to the State Board, administrators of institutions participating in the study, the state planning coordinator, and the following state offices: Planning, Budget, Employment, Commerce and Development, Education, Public Works; the Denver Planning Office; and cooperating public school superintendents and their staffs.

Dr. Paul A. Elsner, state director of community colleges, and Dr. M. G. Linson, state director of occupational education, served as study liaison representatives for the State Board. A close working relationship also was maintained with Dr. Frank C. Abbott, executive director, Colorado Commission on Higher Education. MERI is grateful to these three men and their staffs for the many instances in which they facilitated the progress of the study, and for the time, thought, and energy they devoted to the project.

## II THE MASTER PLAN

The mission of the State Board is to create and maintain a fully developed, well coordinated, effective system of community colleges and occupational education in Colorado. Because both community college education and occupational education are relatively underdeveloped in the state, the Board is in a position of great challenge and opportunity to contribute significantly to economic growth, social and cultural progress, and individual self-realization.

Basic to the master plan is the concept of education as a system. Community college and occupational education should be viewed as essential and important ingredients in a total educational system which includes:

1. Strong unified school districts through grade 12.
2. Community college administrative areas blanketing the entire state, with campuses and centers where justified by student enrollment potential, and with programs carefully articulated with those of unified school districts, other community colleges, and four-year colleges and universities.
3. Four-year colleges and universities with extension centers.
4. Interinstitutional arrangements for specialized professional programs and graduate research.
5. Cooperative arrangements with related systems such as public libraries, science and art museums, and the performing arts.

Community college and occupational education should also be looked upon as systems. The orientation of these systems should be to begin with educational needs, to organize flexible programs to meet these needs, and to provide staffs and facilities for the effective development and conduct of these programs. A community college, therefore, should not be viewed primarily as a facility. Nor should an area vocational school be considered primarily a facility. They are organizational entities designed to meet educational needs. Meeting needs requires

programs, personnel, and facilities. But the possible organizational patterns are many, and emphasis should be directed toward the most effective utilization of resources to meet educational needs.

## Elements of the Master Plan

This master plan is designed to provide guidelines in assisting the State Board to achieve its mission.[1/] (Elaborations on some of these elements are presented later in this chapter.)

### Organizing for Coordinated Action

To ensure the provision of community college services to all parts of the state and to facilitate coordination and program articulation, the following actions are recommended.

1. Divide the state into seven community college administrative areas, as shown in Figure 1, namely: Denver Metropolitan, Pueblo/Southeastern, South Central, Western, North Central, Northeastern, and Colorado Springs/Eastern--each headed by a president reporting to the state director of community colleges. Each area should have at least one campus with an enrollment of 1,000 (and preferably substantially more) full-time equivalent (FTE) students, supplemented where feasible in less populous areas by community college centers of 300 to 800 FTE students.

2. Also divide the state into seven occupational planning and programming areas, for the purpose of developing a full range of occupational education from the kindergarten up to but not including the baccalaureate degree. These areas are geographically the same as the community college administrative areas with only a difference in function and supervisory head; each would be headed by an area coordinator of

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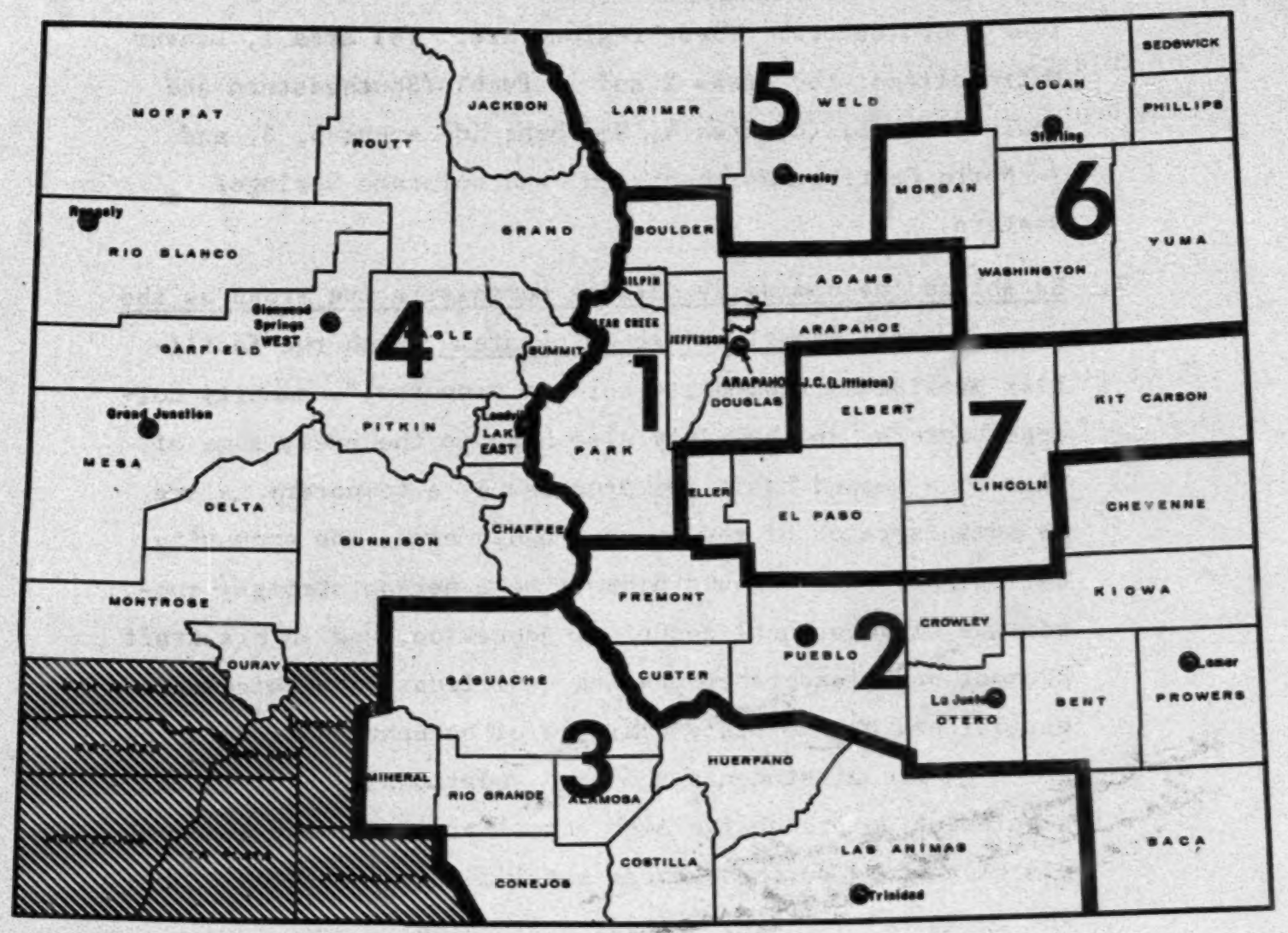
1/ The plan assumes that all local junior colleges will become part of the state system. If some do not, adaptations in the plan may be necessary. These can best be made in the light of circumstances at the time of implementation.

## Figure 1

## PROPOSED COMMUNITY COLLEGE ADMINISTRATIVE AREAS STATE OF COLORADO




FOUR CORNERS AREA

COMMUNITY COLLEGES IN OPERATION, FALL 1967

FORMER PUEBLO JUNIOR COLLEGE

occupational education reporting to the state director of occupational education. However, an area coordinator may be assigned more than one planning and programming area. It is recommended that the areas served by these coordinators be grouped into four regions, thus requiring only four coordinators. These regions are: (a) Area 1, Denver Metropolitan; (b) Areas 2 and 3, Pueblo/Southeastern and South Central; (c) Area 4, Western; (d) Areas 5, 6, and 7--North Central, Northeastern, and Colorado Springs/ Eastern.

3. Establish the community college administrative areas as the base for area vocational school systems, with the facilities provided at community college campuses, community college centers, and possibly elsewhere in the area, some of them on a leased basis for programs of a temporary nature. As administrator of the system in his area, the community college president should himself be a person strongly supportive of vocational-technical education, and on his staff he must have leadership meeting qualification requirements established by the state division of occupational education. For high school students the area vocational school would supplement comprehensive high school programs, and a school district would purchase these supplementary services from the community college administrative area.

4. Make the State Board responsible for all occupational education curricula offered by Colorado institutions of higher education, such responsibility to include the control of and budgeting for these programs. Normally such curricula should be offered by the community colleges, but where more feasible educationally and economically, the Board may desire to purchase such services from other institutions, such as state colleges.

## Meeting Local Needs

A major difference between the community college and other institutions of higher education is that the community college is committed to meeting local needs by providing appropriate educational opportunities for residents of the local area it serves. Implicit in this position are three concepts: local lay participation in program planning, reasonable access to educational opportunities, and the right to exceed state supported programs. To ensure meeting local needs, the following actions are recommended.

1. Expand opportunities for local lay participation. With the establishment of community college administrative areas, the number of local college council members probably should be increased in some areas to ensure adequate representation. To strengthen local participation further, each college council should nominate, for appointment by the State Board, a local college advisory board of seven to nine members for each campus and center under its jurisdiction; the functions of this local advisory board are to provide suggestions on programs and program developments--such as occupational and other curricula, student services, and public service activities. Properly composed, such a board also will serve as a means for more effective coordination and articulation in the local community. The board should be composed of key representatives from business and industry, agriculture, labor, the professions, unified school districts, and other education and manpower organizations.

2. Continue, as a minimum, the State Board's policy of low tuition and minimal fees, thus making community college education reasonably accessible financially to all, regardless of socio-economic status. In the future, consideration should be given to adopting a policy of a completely tuition-free community college system, thus further enhancing equality of educational opportunity from the financial standpoint.

3. Assure reasonable access to community college and area vocational-technical educational opportunities by (a) establishing community college campuses and centers in the Denver Metropolitan Area, in Colorado Springs,[1/] and in other locations with sufficient commuter students, and (b) providing subsistence allowances for students residing outside commuter range. To achieve these objectives, the following actions are recommended:

   a. Establish attendance areas, or normal commuter areas, for each community college campus or center. The outer limits of this commuter area should not exceed 30 to 40 miles, depending upon driving conditions, or 45 minutes' to an hour's drive one way.

   b. Plan the establishment of new community college campuses and centers either outside these commuter ranges where by 1980 sufficient enrollments can be realistically achieved, or within these commuter ranges where there is a strong need and enrollment requirements can be met. On the basis of the proposed criteria of at least 1,000 FTE students (and preferably substantially more) for a community college campus, and of 300 to 800 FTE students for a center, the following specific recommendations are made.

      (1) Establish a Pueblo Community College and utilize the approximately 240,000 gross square feet of the Orman campus, the former Pueblo Junior College facilities. Such a move would obviate the need for constructing for Southern Colorado State's new Belmont campus a major portion of the planned 275,000 gross square feet for vocational-technical and

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1/ Community College of Denver and El Paso Community College are discussed later in this chapter.

21,000 gross square feet for health arts, thus saving the state government several million dollars in construction costs.

(2) Plan a new campus for the North Central community college administrative area serving Weld and Larimer counties. Every effort should be made to establish only one major facility for both counties--to be located in an area serving the Greeley, Fort Collins, Loveland triangle. MERI projections indicate that by 1980 the Larimer County population will surpass that of Weld County and that the combined counties will produce a community college day enrollment of approximately 2,000 students. On this recommendation, the action of Aims in joining the state system is critically important. If Aims does not join the system, two major facilities will be required--Aims for most of Weld County, the other chiefly for Larimer County, appropriately located to serve both Fort Collins and Loveland. This alternative should be discouraged.

(3) Consider the establishment by 1980 of community college centers (branch campuses) in certain areas that cannot qualify for campuses. Population projections to 1980 (Appendix A, Table A-1) suggest that the only areas even meriting consideration, probably in the following order, are: the Montrose/Delta area, for a center affiliated with Mesa College; the Four Corners area; the San Luis Valley, for a center affiliated with Trinidad State Junior College; and Morgan County, for a center affiliated with Northeastern Junior College. The Four Corners center could be affiliated either with Mesa College or with Trinidad State Junior College, probably the former. However, it appears to present stronger

possibilities for an interstate planning effort with the other Four Corner states of New Mexico, Arizona, and Utah.

c. Provide subsistence allowances for students residing outside community college campus or center attendance areas, to help equalize opportunity for students in sparsely populated areas. A student normally would not be provided a subsistence allowance to enroll outside his community college administrative area unless the specialized program were not available within that area. Resident facilities for students at area vocational schools should be available not only for post-secondary use but for upper level high school students as well, possibly with block programming arrangements, similar to the Antioch Plan, enabling the high school student to alternate between the area vocational school and his high school of regular attendance. His public school district should provide a subsistence allowance to assist him in exercising his occupational education option.

4. Authorize community college councils, upon approval by the State Board, to exceed state financed programs. It is a principle of educational finance that progress is made in education through the aspiring influence of institutions and communities anxious and able to exceed the foundation program provided to all. College councils should be encouraged to establish nonprofit foundations to receive and administer gifts, bequests, and other contributions for the enhancement of community college education in their administrative areas, or even at a specific campus or center. Serious consideration also should be given to changing the law to enable an individual college council, upon approval by its constituents, to levy a local tax for enrichment purposes.

## Providing State Leadership

The development of strong programs of community college and occupational education in Colorado will depend in large measure upon effective leadership from the state level. Full achievement of this leadership would appear to require the following orientation and actions.

1. Develop the most effective organization and staffing at the state level. Reorganization is inherent in the previous recommendations that the state be divided into seven community college administrative areas and that four occupational education coordinators be appointed. Other reorganization seems indicated.

   The critical element of state staff activity is educational leadership, with regulatory functions a necessary but minimal role. Educational leadership connotes long range and intermediate range planning, curriculum development, establishment of flexible standards, coordination and effective utilization of resources, and evaluation of programs and resources. It involves relieving professional staff of routine activities (such as record keeping and statistical reporting, which can be done more effectively through data processing) and shifting the emphasis from "retail supervision," such as classroom visits, to "wholesale supervision," such as in-service education and program development. A continuing objective should be the maintaining of leadership excellence.

   The present structure of two divisions under the State Board provides an opportunity for coordinating resources through the development of joint staff services. Since the State Board is in its initial year, the time appears appropriate to determine how personnel resources at the state staff level might be coordinated most advantageously.

2. Emphasize cooperative relationships to achieve common goals. The State Board and its staff are in a particularly advantageous position to contribute significantly to the achievement

of numerous local, state, and national objectives and to encourage cooperative relationships leading to more effective coordination of resources. The Board's functions require continuing communication and close working relationships with organizations at the "grass roots" level, with public school systems, with four-year colleges and universities, and with the State Department of Education and Commission on Higher Education. They require similar relationships with the many agencies interested in economic development and full employment, such as the State Planning Office, State Department of Employment, State Division of Commerce and Development, Economic Development Administration, Office of Economic Opportunity, and labor and management groups. The degree to which the Board is successful in developing cooperative relationships and in exercising its leadership potential may well determine the support it receives toward the full accomplishment of its mission.

3. Initiate interstate planning. In addition to overcoming artificial barriers of county lines through statewide planning, the State Board is in a strong position to enhance educational opportunity further through interstate planning. Colorado has many neighbors, with whom natural geographic and socioeconomic interstate relationships already exist. In the long range, interstate planning could be quite advantageous to some of the community colleges located on the periphery--such as Rangely, Northeastern, Lamar, Otero, and Trinidad--where populations are expected to show little growth or actually decline.

For many geographic, socioeconomic, and educational reasons, a particularly good starting point for interstate planning on the development of new programs and related facilities appears to be the Four Corners area (San Juan and San Miguel basins). Since the governor of Colorado is the first state co-chairman of the recently created larger Four Corners Economic Development Region, the State Board seems in an excellent position to initiate interstate compacts with New Mexico, Arizona,

and Utah as a first step in interstate planning for the most effective use of community college and occupational education resources.

4. Support the realistically innovative. Implementation of the master plan will require many realistic innovations to meet educational needs. The posture of state leadership should be one of seeking most effective patterns for the achievement of objectives and incorporating promising new practices and procedures, if only on an experimental basis. In the fulfillment of its leadership role, state staff undoubtedly will want to continue and probably increase the use of resources both inside and outside the state of Colorado--such as those already initiated with The Center for Research and Leadership in Vocational and Technical Education at The Ohio State University and with Colorado State University. Colorado State University is engaged in pioneering work in programmed instruction and the applications of technology to the educative process, which should be advantageous in the development of innovative approaches to both community college and occupational education in Colorado.

5. Update experience. In the development of the master plan, every effort was made to utilize pertinent information available from authoritative sources within the state. In some instances, partly because the State Board is engaged in a pioneering effort, it was necessary to supplement this information with applicable experience elsewhere.

   The importance of valid and reliable information as the basis for decision making cannot be overemphasized. It is recommended that the State Board strongly support at the state staff level an adequately financed research and planning unit which will be responsible for gathering significant information on a continuing basis, in part for the purpose of revising projections contained in this master plan. Such a unit would be invaluable in shaping the character of community college

and occupational education in the years ahead. Its activities would include: initiating or participating in manpower forecasts and translating these into required occupational programs, revising forecasts of student population patterns, developing information related to personnel and space utilization, forecasting financial requirements, and measuring the effectiveness of various curriculum approaches.

This master plan is considered a conceptually sound framework based upon the best information available to the MERI research staff and its national consultants. The master plan should be, and undoubtedly will be, modified over time as current valid and reliable information based upon actual experience becomes available.

## Community College of Denver

### Planning Factors

The master planning for Denver Community College to serve the five metropolitan counties is complicated by a number of factors.

First is the legislative demand that the college open three college campuses in the next three consecutive years. Although MERI understands the sense of urgency which led to this legislative move, it is recommended that the legislature consider amending that section of the law which specifies a new campus to be organized in 1969 and one in 1970, to read that after the organization of the first campus in 1968, the Denver Community College system proceed with all due haste to open additional sites and supplementary centers in the metropolitan service area. The complexities of college planning and the permanent or semi-permanent nature of early moves in college development suggest that the Denver area may be saddled with early planning errors induced by this calendar demand. The master planning which will be required to promote wise development of the Denver Community College system will require a year or more of intensive effort on the part of local staff, state personnel, and such outside services as may be appropriate. The location of permanent or semi-permanent sites prior to such intensive planning would be a serious mistake indeed.

Another factor contributing to the difficulties of master planning for the Denver Community College system is the existence of the Metropolitan State College program in downtown Denver. Metropolitan State College now offers community college-level occupational programs within the context of a state college. However, there is considerable evidence that the technical programs offered at Metropolitan State have been significantly upgraded beyond the needs and interests of many occupationally-oriented students. Moreover, the Colorado Commission on Higher Education has recommended that Metropolitan State College develop as an urban four-year college and that programs of two years or less be assumed by the two-year colleges.

A third complication is the existence of the Emily Griffith Opportunity School in the Denver Public School system. This school carries with it a great tradition, and the belief in the community at large that it satisfies the bulk of the industrial training needs or occupational training needs of the metropolitan area. Although the Emily Griffith School serves an important educational mission, it does not fulfill the community college function in the Denver Metropolitan Area any more than does the Metropolitan State College program.

The fourth factor is the activity of city planners in designation of a technical institute site in the Model Cities redevelopment plan. Thus, the city planners have become involved not only in site selection, but in educational programming normally the responsibility of a community college board and administration.

Outside these specific factors are the multitude of pressures and influences brought to bear on master planning in any metropolitan area. The various communities surrounding Denver are exerting as much influence as possible to secure their share of the educational values and of the tax dollars to be appropriated to the community college system. Much of this pressure comes from those areas surrounding Denver City and County itself. There seems at this time little organized drive within Denver City and County to secure additional community college services beyond those currently being offered by the Emily Griffith Opportunity School and by Metropolitan State College. Such is not the

case in Jefferson County, in the Cherry Hills area of Arapahoe County, in the Mapleton school district, in the Aurora area, and in the Boulder-Longmont area--where educators and other citizens have evidenced keen interest in having community college facilities located in their areas.

## Recommended Planning Policies for Denver Community College

After a careful examination of the population of the Denver Metropolitan Area, its ethnic distribution, its relationship to the transportation network, its growth patterns, and its political, sociological, and civic pressures, MERI makes the following recommendations within the present law.

1. That any site opened by the Denver Metropolitan Community College system should have as its primary focus in its opening years the occupational program, so that the system may escape the usual hazard of academic upgrading of the courses toward a four-year college or university level.

2. That within the time limitations demanded by the law, the Community College of Denver attempt to organize its programs with flexible scheduling, so that students may move in and out of the college with greater flexibility than is allowed by the usual quarter or semester system operation.

3. That the college further develop extensive individual instruction programs and programs related directly to industrial or commercial needs.

4. That the college utilize, wherever possible, existing facilities within the community, thus emphasizing an educational system rather than educational facilities.

5. That because of the uncertainties of selecting permanent site locations and because of the shortage of planning time, the Community College of Denver rent or lease facilities in its early operational years, and that it purchase no permanent sites until extensive study of site needs and community needs has been accomplished.

6. That the permanent campuses when established be located so that the student body will represent the varied social and ethnic background of the total community.

## Site Selection Priorities

Within the planning guidelines just cited, MERI makes the following recommendations regarding appropriate areas for site locations.

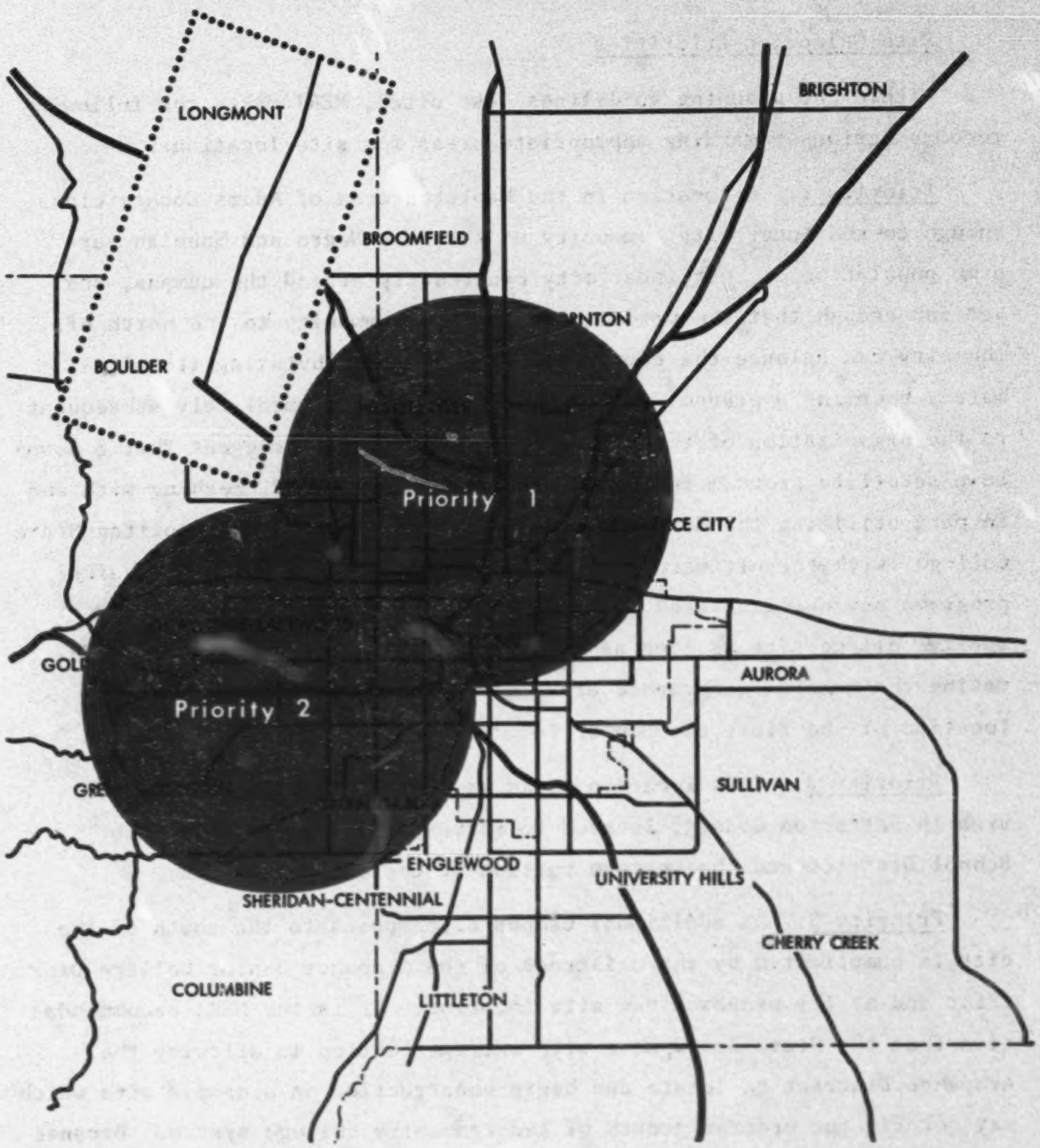
Priority 1. A location in the Mapleton area of Adams County close enough to the inner city community so that the Negro and Spanish surname population of that inner city can readily attend the campus, and yet far enough that the predominantly white community to the north of the city can balance the campus population, thus obviating its ultimately becoming a predominantly minority campus. Immediately subsequent to the organization of this first campus, MERI would suggest that a downtown satellite program in leased facilities be offered, meshing with and in part utilizing the services, staff, and facility of Metropolitan State College, with the ultimate goal of transferring the two-year technical programs now being offered by Metropolitan State to a downtown community college site as soon as feasible. See Figure 2 for a map indicating the general geographic areas within which MERI recommends the location of the first two Denver Community College permanent sites.

Priority 2. This location would be west of the downtown Denver area in Jefferson County, located to serve primarily the Jefferson School District and the western portion of the city of Denver.

Priority 3. An additional campus or campuses to the south of the city is complicated by the existence of the Arapahoe Junior College District and by its proposed new site location. It is the MERI recommendation that the State Board move with extreme caution in allowing the Arapahoe District to locate and begin construction on a campus site which may not fit the ordered growth of the community college system. Because it is not known whether Arapahoe will elect to join the state system, MERI cannot, with surety, plan the relationship of the Arapahoe program to the remainder of the Denver Community College system; nor in fact

Figure 2

## PROPOSED DENVER COMMUNITY COLLEGE CAMPUS SERVICE AREAS FOR FIRST AND SECOND SITES




Source: Developed by MERI, 1968

can other reasonable planning for the southern portion of the planning area be done.

Because of the uncertainty relative to the Arapahoe campus and other uncertainties pertaining to the inner city, MERI suggests that the State Board develop the rationale for the third site out of its experience in the first and second years of operation. MERI recommends that extension service in the inner city be provided from the first campus put in operation; thus the community college administration will have first-hand experience as a basis for determining how it can provide for inner city educational needs most effectively.

Further, MERI recommends that the State Board take a firm position relating to the location of the proposed new Arapahoe Community College campus. The Board should seriously consider the free site offered in the Cherry Creek District as part of the proposed educational park complex for several reasons: its location, developments south along the Valley Highway, and the great interest of school districts centering around the area. The building of an Arapahoe campus significantly to the west of this location may seriously impair the efficiency of service to the general area, and would appear to be an unwise expenditure of limited capital resources for the construction and equipping of community college facilities.

In the Boulder Valley Area Vocational-Technical Center, local voters have already built a fine occupational center to supplement local high school programs. Under MERI's plan to combine such area vocational centers with junior college operation, it is important that the Denver Community College system make its plans to include this operation ultimately within the community college framework. Because the area is served by an excellent facility, and the organization for operating it is already in service, the Denver Community College administration need not turn its attention during the early planning phases to the Boulder-Longmont area, but may spend its time on more critical areas to be served.

## Enrollment Projections

Fall term community college day enrollments in the Denver Metropolitan Area, including students who may be attending Arapahoe Junior College, have been projected at 6,200 by 1970, 11,000 by 1975, and 13,125 by 1980. For detailed enrollment data and other demographic information relating to the Denver Metropolitan Area, see Chapter VI.

## El Paso Community College (Colorado Springs)

The El Paso Community College is scheduled to open in fall 1969, but for a campus of the size contemplated, a minimum of three years will be required from the time detailed educational planning begins until the campus is ready for students. Logically, the development of educational specifications should not be initiated until the college president assumes his responsibilities. Therefore, the college council and the Board should contemplate opening the college in temporary facilities in fall 1969 and moving to the permanent college campus in fall 1971 or 1972.

Planning for El Paso Community College should be relatively uncomplicated. At the outset a major question was whether, in the long range, the college council and the State Board should plan for one campus or two. This decision might make a substantial difference in the selection of the first site. Present evidence indicates that through 1990 one campus will be sufficient to serve the Colorado Springs/Eastern community college administrative area, which also includes Elbert, Kit Carson, Lincoln, and Teller counties. Population projections to 1980 show only El Paso and Teller counties gaining in population, the heaviest growth both in absolute numbers and in proportion to present population occurring in El Paso County (Table A-1). The MERI planning guidelines indicate that the Colorado Springs campus should have day enrollments of 1,100 students by 1970, its second year of operation; 2,100 by 1975; and 4,200 by 1980.

MERI population projections indicate that El Paso Community College could have a day enrollment of 5,000 by 1990. Much, of course, will

depend upon the programs offered at this college and the extent to which it will draw from other parts of the state.

With respect to educational offerings, El Paso Community College should plan a diversified program carefully coordinated with high schools and four-year colleges, and particularly with the Colorado Springs school system, which has one of the better occupational education programs in the state. From the beginning the college should have a strong occupational emphasis. Priority occupations appear to be the business and office occupations; the engineering and technical occupations; the health occupations, with registered nursing as the top priority; and law enforcement. (For details, see Chapter VII.) The college should seriously consider offering one of the two hotel/restaurant management programs in the state (the other being at Denver Community College), as well as the related food technology program. Mechanical and repair occupations (such as automotive mechanic), machine shop, and welding should be planned but should be coordinated with the programs of the Colorado public schools. Some students in the college administrative area but outside its attendance area will require residential facilities. So may students from elsewhere in the state who are interested in its specialized vocational-technical offerings.

An imponderable factor at this point is the number of 11th and 12th graders the college will serve in its function as an area vocational school. MERI projections estimate there will be 8,730 high school juniors and seniors in the Colorado Springs/Eastern administrative area by 1980. If one in ten were to utilize the college facility, there would be almost 900 additional half-time or 450 full-time students for whom vocational-technical facilities would have to be planned by that time (see Tables A-2 and A-3). This factor is one that will require further exploration with the public school superintendents in the college administrative area.

On the basis of this analysis, it is recommended that:

1. The educational plan for El Paso Community College be designed from the beginning to offer a diversified program with a strong occupational emphasis.

2. The college be planned, at least through 1990, as a single-campus institution.

3. The college schedule its opening in temporary quarters in fall 1969 and not plan to move to permanent quarters any earlier than fall 1971 and, probably more realistically, spring or fall 1972.

4. A site be selected that will lend itself to development of a college of at least 5,000 students, basically for commuters but with some residential facilities. Depending upon topography, a minimum of 100 acres (and preferably more) should be selected.

5. Construction be planned in two phases, a first phase for a 2,000 to 2,500 day enrollment; a second phase for a 4,000 to 4,500 day enrollment, and the campus so planned that construction beyond the second phase can take place without destroying the basic interrelationships of the campus.

6. As soon as the president assumes his duties, educational specifications be developed for the permanent campus to ensure the most effective utilization of space for the program and to guarantee the orderly development of the campus to its ultimate planned enrollment.

7. At an early date, the president and the state occupational education coordinator for the area begin discussions with the area's public school superintendents to develop realistic plans for providing area vocational school opportunities to upper grade high school youth.

## Financing the Master Plan

The master plan for community colleges will necessitate substantial increases in state outlays for capital and operating funds over the next 12 years. Removal of local financial support, rapidly increasing enrollments in urban campuses, and other factors combine to increase state fund requirements. (For detail, see Chapter VIII.)

It is estimated that $111 million will be required over the next 12 years for constructing new campuses and adding to existing campuses. The three Denver campuses account for about $53 million, or slightly less than 50 percent of this total outlay; the remainder is attributable to two new campuses (El Paso and Weld/Larimer), three community college centers, and additions of buildings and equipment to existing campuses.

If all community colleges enter the state system by 1970, state funds for operation will rise to an estimated $12.3 million during 1970-71. State operating fund expenditures for community colleges will continue to rise rapidly during the decade following 1970, reaching an annual rate of $48 million by 1980-81.

## Discussion of Some Master Plan Elements

As indicated earlier in this chapter, elaboration on some of the master plan elements seems desirable. This section therefore contains amplification of some of the master plan elements previously identified.

### Roles of Area Educational Leaders

The effective development and conduct of community college and occupational education throughout the state will depend in large measure upon the presidents of the community college administrative areas and the area occupational education coordinators.

Though these leaders will work together closely, their roles are quite different. The community college president, reporting to the state director of community colleges, will be responsible for administering programs throughout his area, most of these services being provided at campuses or centers under his administration.

Unlike the college president, the area coordinator will not be responsible for the administration of any programs. In his geographical region, sometimes representing more than one occupational planning and programming area, he will be responsible for developing, authorizing, funding, and evaluating a full-scale program of occupational education, in much the same way that his state director of occupational education provides such leadership on the state level. He will have an important role in the in-service education of teachers and administrators. As needed in the accomplishment of his duties, he will draw upon the specialized capabilities of the state central office staff. Administration of programs, however, will be a function of others, representing such organizations as public school systems, community colleges, private schools, four-year colleges, and universities.

His relationships with other organizations will be many--with the leadership of unified school districts, community colleges, state colleges, private schools, the Extension Division of Colorado State University, and with the many agencies interested in economic development and full employment.

In his region he will implement the State Board's directive from the legislature to "coordinate all resources available for the promotion of job development, job training, and job retraining in the state, including but not limited to secondary, post-secondary, and out-of-school or on-site work programs."1/

## Area Vocational School Systems

To ensure most effective utilization of personnel and space, the master plan recommends that the community college administrative areas be established as the base for area vocational school systems. These area vocational-technical school systems should serve four groups of

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1/ House Bill No. 1448.

persons: youth in high schools; youth and adults in post-secondary education; youth and adults at work or unemployed requiring updating, upgrading, or retraining; and youth or adults with special needs.

Programs in area vocational schools, however, should not be designed to supplant the foregoing services in comprehensive high schools, whose vocational-technical education programs should be strengthened. The area vocational school system should supplement vocational-technical education in comprehensive high schools and other institutions established by unified school districts. Thus, for example, a community college, in its role as area vocational school, should assume the responsibility for providing supplementary vocational-technical education programs for 11th and 12th grade high school students in its administrative areas. Public school districts would purchase these services from the community college.1/

It is recommended that no new permanent area vocational school facilities be constructed until there is reasonable assurance that the space will be utilized effectively and that, if constructed, they be considered a step in the development of a community college center and possibly, in the long range, a community college campus.

The area vocational school system also should be responsible for cooperative occupational education programs to serve high school youth in sparsely settled areas. With the development of programmed instruction for self-study and the possibilities of block programming, particularly at residential community colleges, there appear to be great possibilities for realistic and effective innovations to improve vocational-technical education for these high school youth.

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1/ For an estimate of the number of high school 11th and 12th graders to be so served in each community college administrative area, see Tables A-2 and A-3.

## Occupational Curricula in Public Higher Education

Coordination, economy, and assurance that community college needs will be met are among the many advantages of establishing the State Board as the responsible body for all occupational curricula offered by Colorado institutions of public higher education. The master plan recommends that such responsibility include the control of and budgeting for these programs and that, while such programs normally will be offered by community colleges, the Board may desire to purchase services from other institutions, such as state colleges. In some instances it may be more logical educationally and economically to do so. For example, under the master plan, the president of Trinidad State Junior College and therefore of the South Central community college administrative area would be responsible for the development of an effective program of community college services in the San Luis Valley. From the standpoint of staff and space utilization some of these programs might be offered most advantageously at Adams State College. The president of Adams State College and the South Central president would mutually agree on contractual arrangements, subject to the concurrence of the state director of community colleges. Funding would appear in the budget of the South Central community college administrative area and would be approved by the State Board as purchased services; the program or programs would be administered by Adams State College. Announcement of the offerings could appear in the publications of both Adams State College and the South Central community college area administration.

Under these circumstances the responsibility for providing community college services is fixed, yet unnecessary duplication of personnel and space is discouraged. Similar arrangements might be developed with other state colleges and with Fort Lewis College at Durango. Between the Community College of Denver and Metropolitan State College an arrangement for purchase of community college services would appear to be extremely advantageous for an interim period as Metropolitan State phases toward its ultimate objective of becoming a fully developed four-year institution.

## The Community College Center

Caution in its development. Because achievement of sufficient enrollment may be marginal for a community college center, its planning should proceed with caution. Construction of permanent facilities should not be contemplated until adequate use is assured. The logical approach would be to begin with programs, and use temporary facilities until such time as effective utilization of permanent facilities is apparent. Central to the development of a permanent facility for the community college center should be the area vocational school designed to serve post-secondary students and adults, as well as to supplement high school vocational-technical programs.

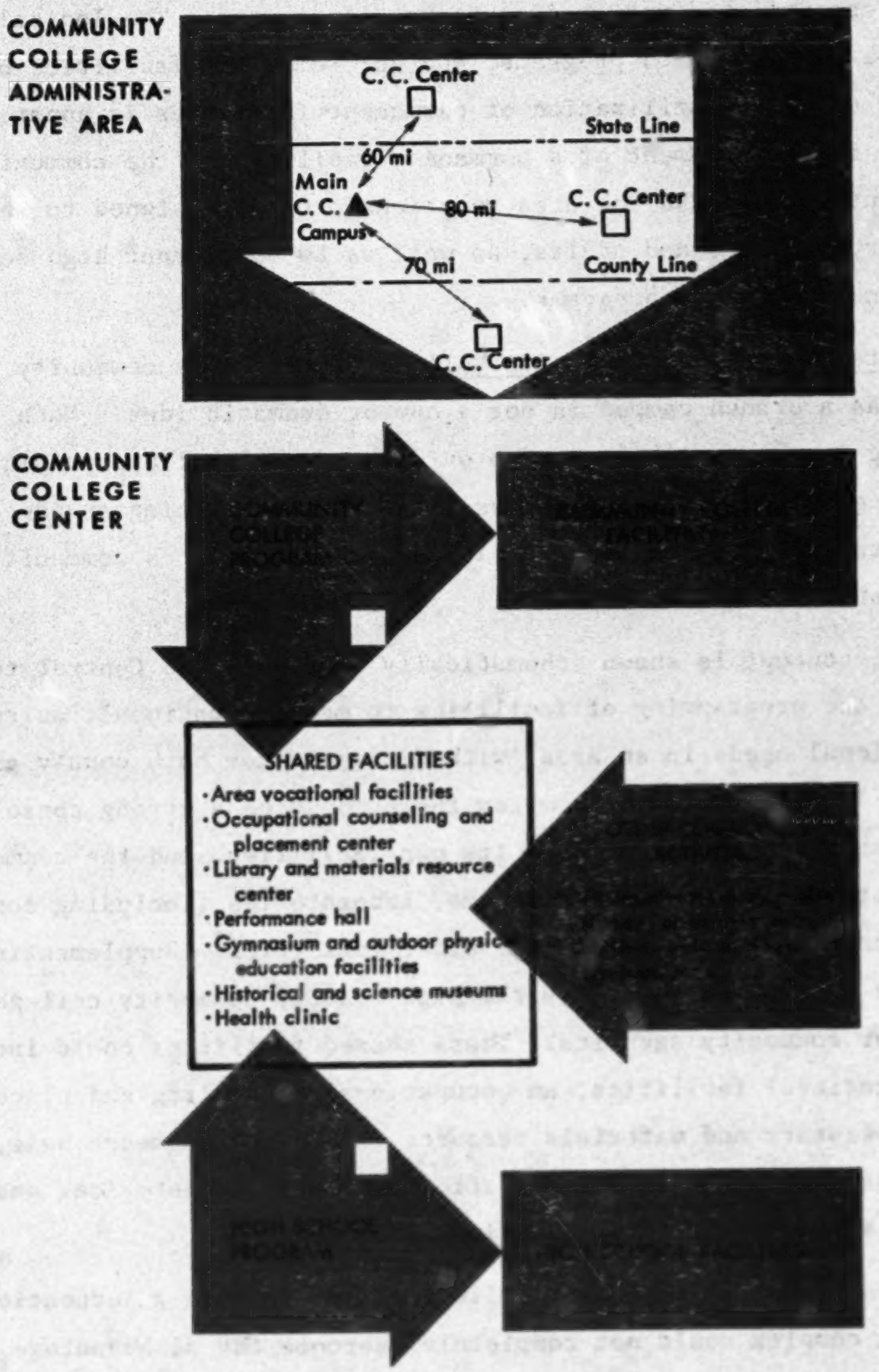
Potential of the Community College Center. The community college center as a branch campus is not a new or dramatic idea. Much more exciting is the possibility of providing educational opportunities and enriching living in less populous areas by establishing an educational and cultural complex around, or in conjunction with, a community college center.

The concept is shown schematically in Figure 3. Central to the concept is the programming of facilities to meet educational, cultural, and recreational needs in an area, with disregard for both county and state lines. Ideally in such a complex there would be a strong consolidated comprehensive high school with its own facilities, and the community college center with its own classrooms, laboratories (including some vocational-technical shops), and other facilities. Supplementing these would be facilities shared by the high school, community college center, and other community agencies. These shared facilities could include area vocational facilities, an occupational counseling and placement center, library and materials resource center, performance hall, gymnasium and outdoor physical education facilities, historical and science museums, and a health clinic.

Establishing a community college center in such an educational and cultural complex would not completely overcome the disadvantage of smallness. The center, however, would enjoy the many advantages of being part

Figure 3

## EDUCATIONAL AND CULTURAL COMPLEX IN SPARSELY SETTLED AREA ESTABLISHED AROUND COMMUNITY COLLEGE CENTER




Source: MERI

of a larger community college administrative area. It would benefit from the specialized administrative and teacher expertise of the larger area and could enjoy very much richer offerings through flexible and innovative programming arrangements. Illustrative would be block programming in occupational curriculums to enable a student to enroll in a community college center, take his academic or related classroom work there, engage in clinical or work experience in the center's service area, and take specialized laboratory or shop work in a block of time at a larger campus of the community college administrative area, or even another administrative area.

Authorization To Exceed State Support

The master plan recommendation that community college councils be authorized to exceed state-financed programs is made on the premise that the state's program itself will be effective and well supported but that latitude should exist for additional enrichment and adaptation to local needs. The law provides that "The construction, operation, and maintenance of the community and technical colleges within the state system shall be financed by the state in the same manner as are all other state institutions of higher learning."1/ The State Board undoubtedly will make every effort to treat all community colleges equitably. It should also recognize and encourage the right of colleges to exceed this program. Thus, if a college council desires to enrich its library resources beyond state standards, provide more individualized counseling, construct an atypical building (e.g., a planetarium) or staff a related educational activity as part of its community services program (e.g., a historical museum), it should be encouraged to do so, provided that financial support from local sources is forthcoming.

Two approaches to this local support are possible. One is the standard approach of establishing a nonprofit foundation to receive and administer gifts, bequests, and other contributions. The other approach would enable an individual college council, upon determination

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1/ House Bill No. 1448.

that it wishes to enrich its programs, to request permission from the State Board to levy a local tax (within tax limitations) for enrichment purposes. The State Board, in turn, would ask the county tax commissioners of the counties involved to place this item on the ballot and, if the citizens vote approval, to levy the tax and deposit it for budgeting by the college council. It is essential that these funds be part of the total budget of the community college administrative area and that they be spent in accord with the same kind of approvals required for funds coming from the state. They should not be used to develop programs without state permission which the state would have to take over at a later date. Such a provision, which would require a change of the law, appears to merit serious consideration.

Providing State Leadership

The functions and organization of the State Board are discussed fully in Chapter III. Only two points need summary here. One relates to the roles of the State Board itself. In the recent establishment of the State Board, Colorado may have created an organizational innovation which will ensure at the policy level the most effective coordination of community college education and occupational education, two closely related educational functions. The State Board is, in effect, two state boards--a state board for community colleges and a state board for occupational education--both staffed by the same members operating in a dual capacity, each board with its own executive officer. Recognition of this fact is important, for concern has been expressed over two executive officers and an executive secretary reporting to the same board. In due course, after more immediate major problems are resolved, it is recommended that the State Board re-examine its top administrative structure to determine whether revisions along more traditionally accepted lines might be advantageous.

The other point relates to a change in the law (House Bill 1170, Section 3) to specify that on the advisory committee to the Commission on Higher Education the community college member shall be from the State Board rather than from the membership of junior college committees of local junior colleges.

One final point relating to state leadership needs to be made with emphasis. State leadership becomes only a generality unless its mission is supported financially. Without strong financial support the potential of the master plan will never reach fruition.

Colorado state support for occupational education consistently has been substantially below the national average (see Chapter IV). A starting point on occupational education would be to increase state support to the national average. Such an objective probably can best be reached by submitting the occupational education budget directly to state budget authorities, thus obviating initial screening by the Commission on Higher Education. As previously stated in this chapter, financial requirements for the community college portion of the master plan are substantial.

What fulfillment of the master plan requires is a strong commitment on the part of not only the State Board itself, but also the Commission on Higher Education, state budget authorities in both the legislative and executive branches, the governor, the state legislature, and all others who believe in equality of educational opportunity and the value of education in attaining social, cultural, and economic goals.

## III STRUCTURE AND FUNCTIONS OF THE STATE BOARD FOR COMMUNITY COLLEGES AND OCCUPATIONAL EDUCATION

The structure and functions of the State Board for Community Colleges and Occupational Education (State Board) are defined in the Community College and Occupational Education Act of 1967,[1/] which resulted from the recommendations made by the Colorado Commission on Higher Education. The act was signed into law by Governor John Love in May 1967 and became effective July 1, 1967. It is a far reaching law designed to coordinate and utilize most effectively the resources of the state in meeting Colorado's higher education and occupational needs. Basically the law does the following:

1. Merges the functions previously performed by the Colorado Board of Vocational Education and the Colorado Department of Education's Division of Education Beyond High School but, in so doing, broadens the concept from vocational education to occupational education and emphasizes the role of the community college in the state's higher education future.

2. Places directly under the jurisdiction of the new State Board the management of a state system of community and technical colleges, and provides that all future public community colleges shall be part of this system and operated as state educational institutions.

3. Allows existing local junior colleges to join the state system or, if they and their constituents so desire, to remain outside the state system.

4. With respect to local junior colleges, empowers the State Board to perform all duties previously vested in the State Board of Education and to review and recommend on requests

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1/ House Bill No. 1448.

from local junior colleges for appropriations for capital construction before they are submitted to the Commission on Higher Education and the General Assembly.

5. Specifies that the State Board (a) shall appoint a director of occupational education and a director of community and technical colleges, whose duties and functions the Board from time to time shall define and prescribe, and (b) shall select an executive secretary who shall serve as secretary of the Board and administrative officer.

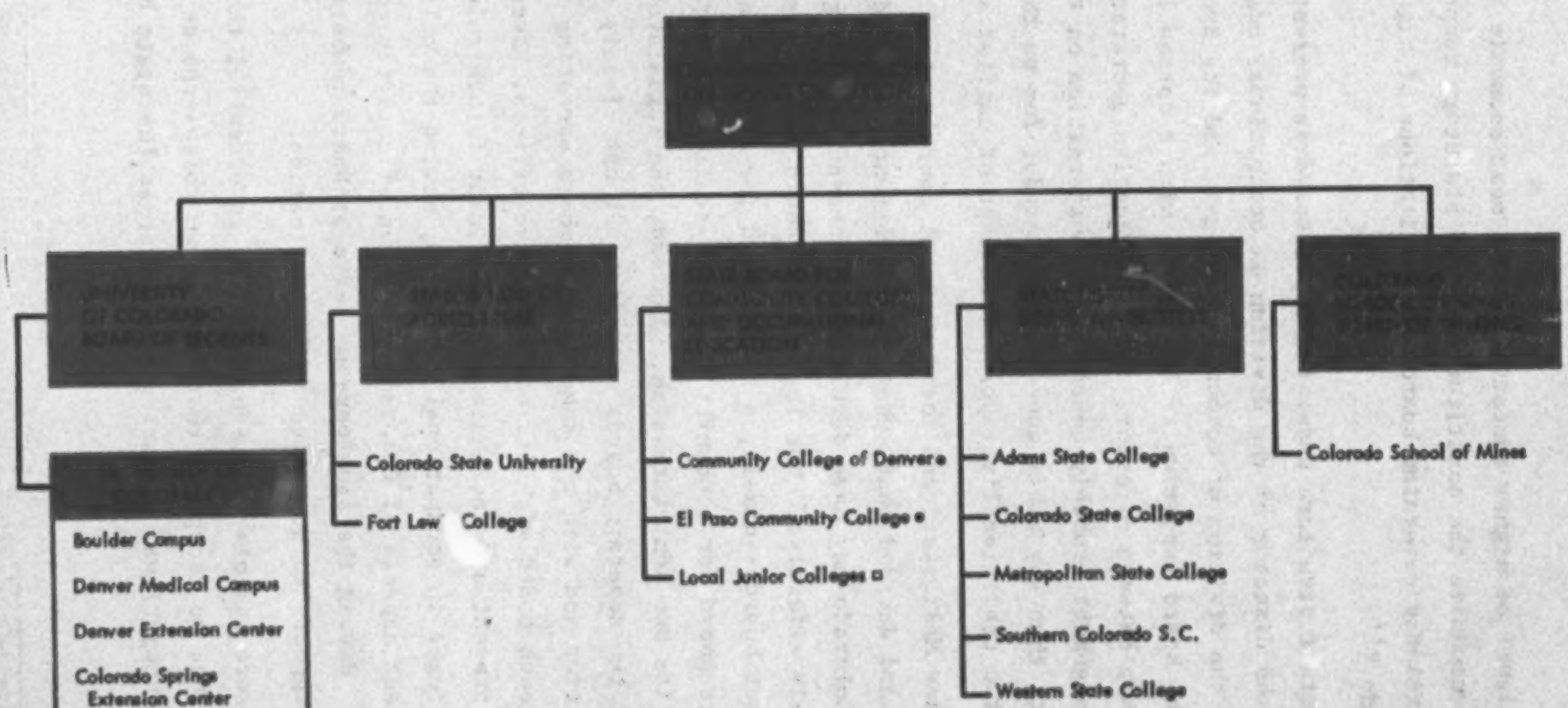
6. Indicates that the State Board shall coordinate certain important activities with and through the Commission on Higher Education, including the location and priorities for establishment of new community and technical colleges, proposals on curriculums and requirements in formal academic programs, and both operating and capital budget requests of the community and technical colleges.

The law does not accord the Commission on Higher Education a review function on occupational education except as it may pertain to community college facilities and budgets. However, the 1968-69 occupational education budget was submitted through the Commission on Higher Education, whose budget document was entitled Budget Recommendations for Colorado Public Colleges and Universities and for Occupational Education, 1968-1969.

The structural context of the State Board, with respect to its functions relating to community colleges, is shown in Figure 4, which presents the organizational structure of public higher education in the state of Colorado. The State Board is one of five boards whose activities are coordinated through the Colorado Commission on Higher Education. This chart symbolizes the declared policy in House Bill No. 1170, "to make opportunities for post-high school education as available as possible in Colorado; to avoid needless duplication of facilities and programs in institutions of higher education; to achieve simplicity of state administrative procedures pertaining to higher education; to effect the best utilization of available resources so as to achieve an

Figure 4

ORGANIZATIONAL STRUCTURE OF PUBLIC HIGHER EDUCATION
STATE OF COLORADO
FALL 1967




• Established but not yet opened
□ Coordination and technical assistance

adequate level of higher education in the most economic manner; to continue to recognize the constitutional and statutory responsibilities of duly constituted governing boards of institutions of higher education in Colorado."1/

The staff structure under the State Board is presented as Figure 5. It shows the director of the division of occupational education, the director of the division of community colleges, and the Executive Secretary of the Board reporting to the Board, with a dotted line liaison relationship between directors and the executive secretary. This structural arrangement probably caused more consternation on the part of respondents than any other aspect of the study, for on the surface it violates the traditionally important concept of unified administration.

The key MERI staff and their national consultants discussed this structure and decided that, whether inadvertently or by design, the state of Colorado may have developed an innovative arrangement that may be extremely effective. The legislature could have created two separate and distinct boards--namely, a state board for occupational education and a state board for community colleges--staffed by different members, each with its own administration. Instead, the legislature has created, in effect, two separate boards with distinct but closely related responsibilities and with the same Board members operating in a dual capacity, each Board with its own executive officer. Because of the important present and increasingly significant future role of the community colleges in occupational education, having the policies of these two important aspects of Colorado education effectively coordinated is essential. Having the same persons serve as Board members for both functions appears to guarantee such coordination.

To ensure administrative harmony, it is essential that the State Board continue to recognize that it has two roles--one as the state board for occupational education, the other as the state board for

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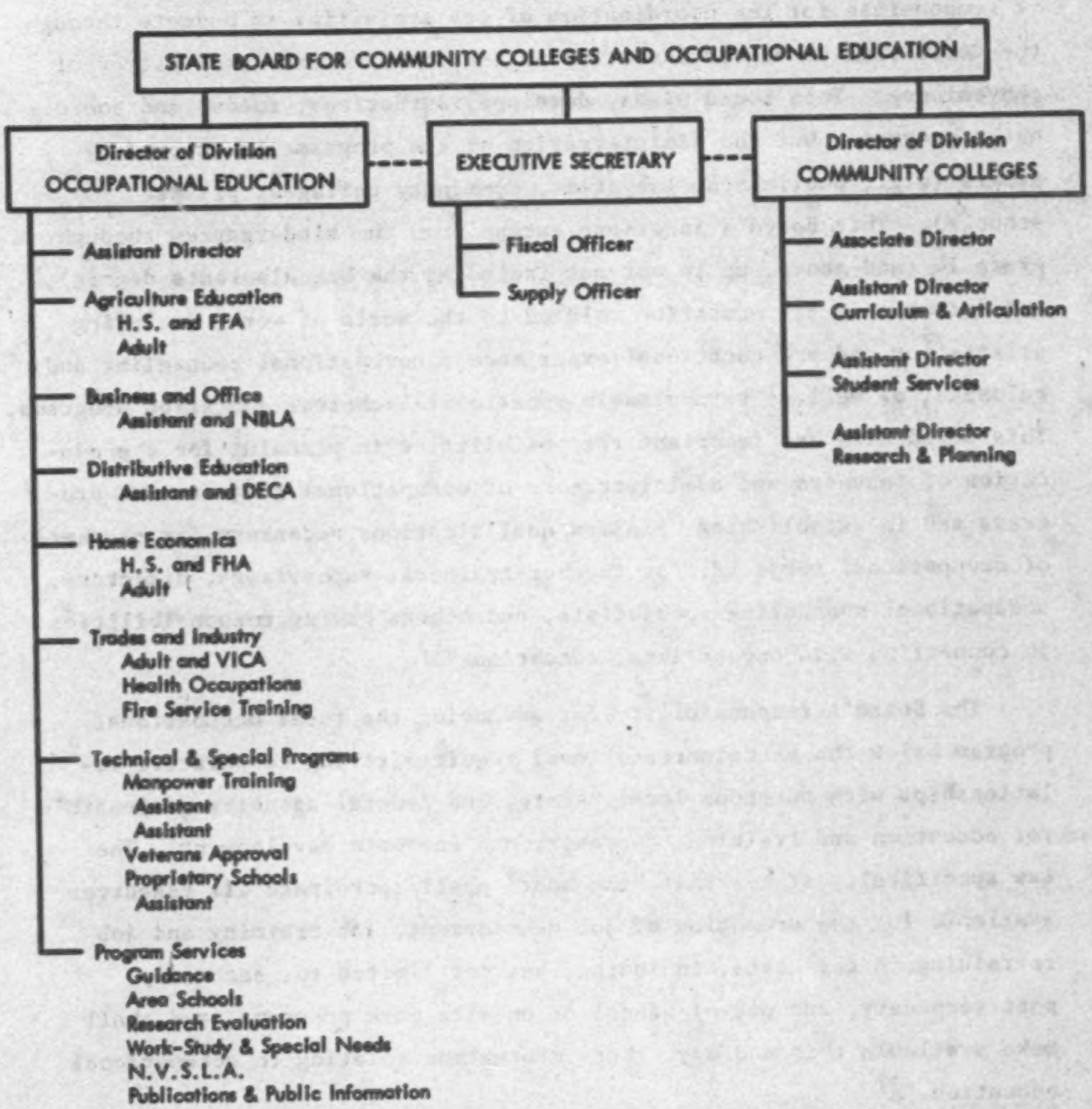
1/ House Bill No. 1170, p. 1.

Figure 5

## PRESENT ORGANIZATION OF STATE BOARD FOR COMMUNITY COLLEGES AND OCCUPATIONAL EDUCATION




Source: Office of the Board, Denver, Colorado.

community colleges--and that it has an executive officer responsible for implementation of its policies for each role.

In its role as the state board for occupational education, the State Board has no responsibility for the operation of programs per se, nor is it responsible for the coordination of its activities or budgets through the Commission on Higher Education unless it so desires as a matter of convenience. This Board plans, develops, authorizes, funds, and coordinates programs, but the administration of the programs is assumed by others (e.g., public school systems, community colleges, private schools). This Board's functions extend from the kindergarten through grade 14 (and above, up to but not including the baccalaureate degree), and encompasses all education related to the world of work, including orientation and pre-vocational experiences, occupational counseling and guidance, as well as reimbursable vocational-technical education programs. This Board also has important responsibilities in planning for the education of teachers and administrators of occupational subjects and programs and in establishing "minimum qualifications necessary for teachers of occupational subjects, for teacher-trainers, supervisors, directors, occupational counseling specialists, and others having responsibilities in connection with occupational education."1/

The Board's responsibility for advancing the total occupational program below the baccalaureate level requires strong cooperative relationships with numerous local, state, and federal agencies responsible for education and training, manpower, and economic development. The law specifically states that "the board shall coordinate all resources available for the promotion of job development, job training and job retraining in the state, including, but not limited to, secondary, post-secondary, and out-of-school or on-site work programs, and shall make available this and any other information relating to occupational education."2/

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1/ House Bill No. 1448, p. 6.

2/ Ibid., p. 7.

Its all-encompassing interest in occupational education places the State Board in the strategic position of exercising leadership and of promoting effective coordination. To be effective, a substantial increase in state funding will be required. An initial objective might be to achieve the national average of state support for vocational-technical education.

In its role as the state board for community colleges, the State Board is responsible for the administration of programs and, with respect to local junior colleges, for coordination and the provision of technical assistance. As specified in the law, in this role the State Board has very important continuing relationships with the Commission on Higher Education, relationships similar to those of other state boards for public higher education in the state.

This relationship will require a change in House Bill No. 1170, section 3, relating to the advisory committee. This section specifies that one member of the nine-member advisory committee shall be elected by each of the following boards from its membership: the Board of Regents of the University of Colorado, the State Board of Agriculture, the Board of Trustees of the Colorado School of Mines, the Board of Trustees of the State Colleges. With respect to the junior colleges, the law states that "One member shall be elected by the junior college committees of the public junior colleges in Colorado from the membership of such committees."1/ It is suggested that the law be revised to read, "One member shall be elected by the State Board for Community Colleges and Occupational Education from its membership."

Though a strong rationale has been established for two executive directors reporting to the State Board--one for each of its separate roles--less enthusiasm is expressed for having a third person, the executive secretary, reporting directly to the Board. While this arrangement appears to be working well at the present time, largely because of the personalities involved, in due course the Board should

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1/ House Bill No. 1170, p. 2.

examine this structural relationship. Given a different Board composition and a different person in the position of executive secretary, disharmonies may ensue which would be disadvantageous to the accomplishments of the Board's dual mission.

The State Board may also find that, in the long range, it is impossible to keep its two major roles separate and that, in the interest of harmonious administration, a single executive officer responsible for the implementation of all Board policies should be appointed, such executive officer also to serve as secretary to the Board.

It is emphasized, however, that the present structural arrangement has been in effect only since July 1, 1967; that it appears to be working well with the present personalities involved; and that it does not represent a priority concern of the Board at this time. After some of its more pressing problems are resolved, it is suggested that the Board re-examine its top administrative structure, with a view to possible revision.

## IV CURRENT STATUS OF COMMUNITY COLLEGE AND OCCUPATIONAL EDUCATION

As a basis for development of a statewide master plan, an analysis was made of the current status of community college and occupational education in Colorado. This chapter of the report will briefly describe this status, particularly as it relates to programs, facilities, and funding.

The newly created State Board has both a great challenge and an opportunity, for Colorado is relatively underdeveloped in both community college and occupational education. There are many reasons for this situation, not the least of which have been the well developed system of four-year colleges and universities and the historic role of the internationally recognized Emily Griffith Opportunity School in the Denver public school system.

### Community College Education

Indicative of the status of community college education in Colorado are statistics in Table 1, presenting the relation of community college enrollments to population for 1965, the latest year for which reliable relevant information nationally was available. This table shows that total community college enrollment in the United States in 1965 was 0.66 percent of the nation's population. Among ten selected states distributed throughout the nation, the relation of community college total enrollment to population ranged from 0.16 percent in West Virginia to a high of 2.63 percent in California, where community colleges play a very important part in the state's system of higher education. In Colorado, community college total enrollment was 0.38 percent of the state's population.

Significant also is the relation of part-time enrollment to total enrollment. This figure normally is considered a gross measure of emphasis placed upon evening college programs and, therefore, the degree to which colleges are serving the diversified functions of a true

Table 1

RELATION OF COMMUNITY COLLEGE ENROLLMENT TO POPULATION AND PART-TIME ENROLLMENT TO TOTAL ENROLLMENT[1/]
Selected States
October 1965

| Area | Total Enrollment as Percent of Population | Part-time Enrollment as Percent of Total Enrollment |
|---|---|---|
| Total U.S.[2/] | 0.66% | 47.7% |
| Selected states | | |
| California | 2.63 | 60.0 |
| Arizona | 1.22 | 57.5 |
| Florida | 1.04 | 38.1 |
| Michigan | 0.73 | 50.7 |
| Vermont | 0.61 | 0.3 |
| Connecticut | 0.53 | 48.0 |
| Oklahoma | 0.42 | 19.9 |
| COLORADO | 0.38 | 25.1 |
| Arkansas | 0.16 | 25.3 |
| West Virginia | 0.16 | 17.7 |

1/ Includes both day and evening enrollments.

2/ Excludes outlying territories.

Source: MERI, based on (1) enrollment data from 1967 Junior College Directory (2) population data from Rand McNally Commercial Atlas, 1967.

community college. For the nation as a whole, part-time enrollment was 47.7 percent of total enrollment. Again, among the selected states there was great variation, the proportions ranging from 0.3 percent in Vermont to 60.0 percent in California. For Colorado the figure was 25.1 percent.

## Existing and Planned Community Colleges

Colorado is now served by eight junior college districts representing ten campuses (the Mesa and Colorado Mountain districts have two campuses each). These ten colleges are listed in Table 2, showing the opening year of the college and the fall 1967 enrollment.

Table 2

OPENING YEAR AND ENROLLMENT IN JUNIOR COLLEGES

| Year Opened | College | Enrollments[1/] Total | Continuing Education |
|---|---|---|---|
| 1925 | Mesa | 2,815 | 815 |
| 1925 | Trinidad | 1,480 | 122 |
| 1937 | Lamar | 600 | 38 |
| 1941 | Northeastern | 2,634 | 843 |
| 1941 | Otero | 940 | 380 |
| 1962 | Rangely (Mesa District) | 291 | 45 |
| 1966 | Arapahoe | 952 | -- |
| 1967 | Aims | 943 | 612 |
| 1967 | Colorado Mountain, East Campus | 271 | -- |
| 1967 | Colorado Mountain, West Campus | 228 | -- |
| Total | | 11,159 | 2,855 |

1/ Provided by the Office of the State Director of Community Colleges, with the notation that "continuing education head counts are only approximate insofar as the individuals could be identified by age, lapse of time without formal enrollment, and/or type of program enrolled in by student."

This information indicates (1) that community colleges in Colorado represent both those that were in the vanguard of the junior college movement nationally, namely, Mesa and Trinidad, and those that have been established very recently; (2) that all total enrollments are under 3,000 and most of them under 1,000; and (3) that, with the exception of recently established Arapahoe, all colleges are located outside the more populous Standard Metropolitan Statistical Areas (SMSA) of Denver, Colorado Springs, and Pueblo. Two four-year institutions, namely, Fort Lewis College at Durango and Southern Colorado State College at Pueblo, formerly were two-year institutions. Excluding newly established institutions, which are in the accreditation application process, all Colorado community colleges except Lamar are accredited by the North Central Association of Colleges and Secondary Schools.

In addition to the existing community colleges, the Community College of Denver and the El Paso Community College have been established. Authorized in 1967 by the Colorado State Legislature, they are the first institutions in "a state system of community and technical colleges which shall be under the management and jurisdiction of the state board for community colleges and occupational education."[1/] With respect to the Community College of Denver, the law specifies a multicampus operation and requires the Board to project the development of three campuses, one to open in the fall of 1968, one in 1969, and one in 1970. The El Paso Community College, to be located at Colorado Springs, is scheduled to open in 1969.

The map Figure 6 defines the boundaries of existing community college districts, referred to in the law as "junior college districts"; shows the communities in which campuses are located; and identifies the counties specified in the law for the Community College of Denver and the El Paso Community College. It is apparent that, even after the

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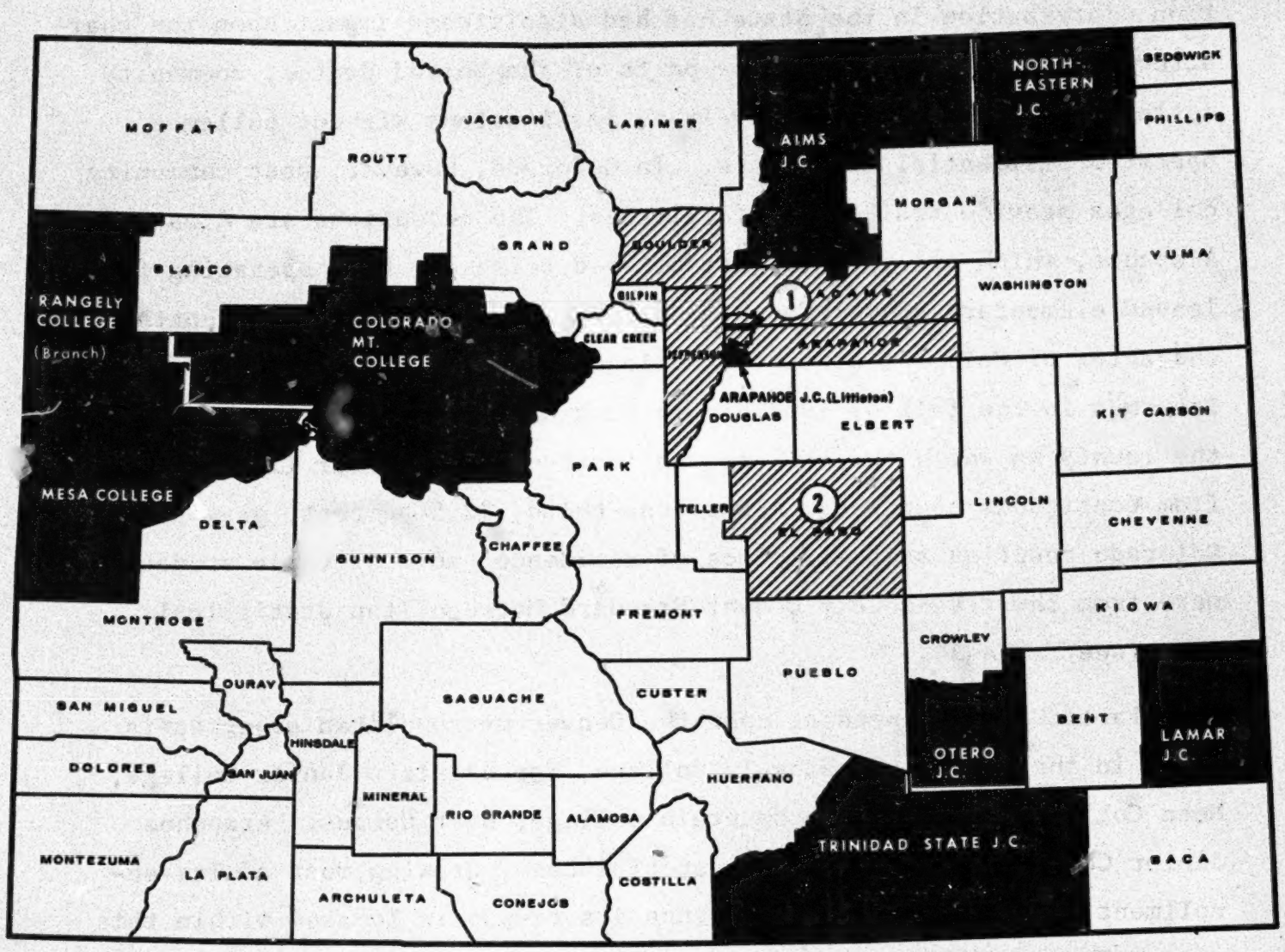
1/ "The Community College and Occupation Act of 1967," House Bill No. 1448, p. 3. (House Bill No. 1449 created the Community College of Denver, House Bill No. 1450 the El Paso Community College.)

## Figure 6

# COLORADO COMMUNITY COLLEGE DISTRICTS
# FALL 1967




EXISTING DISTRICTS

1 COMMUNITY COLLEGE OF DENVER

2 EL PASO COMMUNITY COLLEGE (at Colorado Springs)

} Established by the State Legislature but not yet opened

establishment of the Denver and El Paso institutions, most of the state's counties still have no community colleges; most of these counties are sparsely settled.

The location of existing community colleges in relation to population distribution in the state has had significant impact upon the character of the colleges. In many parts of the United States, community colleges are designed exclusively as institutions without college-operated residential facilities. In Colorado, however, most community colleges provide residential facilities. The exceptions are Aims and Arapahoe, which are recently established colleges, both operating from leased elementary school facilities. The reason for the residential character of Colorado community colleges, is that, of the 4,852 entering freshmen in the fall of 1967, fewer than half, 44.4 percent, came from the county in which the college was located, and another 13.9 percent from contiguous counties. Almost one-third, 32.5 percent, gave other Colorado counties as their place of residence; most of these students were from the five-county Denver Standard Metropolitan Statistical Area (see Table 3).

Particularly dependent upon the Denver metropolitan area, as is shown in the table, are Rangely College, Northeastern Junior College, Mesa College, and Colorado Mountain College, West Campus. Arapahoe Junior College is, of course, a special case, drawing most of its enrollment from the Denver SMSA, since its campus is located within this area. The availability of low cost community college education in high population centers could seriously affect enrollment patterns of local community colleges dependent upon these centers as sources of students.

Student charges at state community colleges are planned to resemble closely what many consider to be the ideal of the open door, tuition-free college. The State Board has established the policy of low student charges in order to make community college education readily available to all who desire it, regardless of socioeconomic status. It has recommended that the tuition for the Community College in Denver, when it opens in 1968, be $30 a quarter for a full-time student, or $90 for the

Table 3

RESIDENCE OF ENTERING FRESHMEN
COLORADO COMMUNITY COLLEGES

| | Aims | Arapahoe | Colorado Mountain East Campus | Colorado Mountain West Campus | Lamar | Mesa | North-eastern | Otero | Rangely | Trinidad | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Freshmen | 268 | 366 | 271 | 228 | 264 | 1,344 | 1,016 | 258 | 148 | 689 | 4,852 |
| Place of Residence | | | | | | | | | | | |
| County of school location | 78.7% | 67.5% | 83.1% | 44.7% | 51.9% | 41.2% | 20.3% | 54.3% | 18.9% | 44.0% | 44.4% |
| Contiguous counties | 15.7 | 30.6 | 7.7 | 16.7 | 6.8 | 9.3 | 20.2 | 14.7 | 3.4 | 10.1 | 13.9 |
| Other Colorado counties | 5.6 | 1.9 | 7.0 | 32.9 | 25.0 | 40.3 | 51.7 | 26.7 | 60.8 | 24.4 | 32.5 |
| Out-of-state and foreign | 0.0 | 0.0 | 2.2 | 5.7 | 16.3 | 9.2 | 7.8 | 4.3 | 16.9 | 21.5 | 9.2 |
| Total | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| From Denver SMSA | 9.0% | 92.6% | 3.3% | 26.8% | 9.5% | 27.6% | 37.2% | 8.9% | 38.5% | 13.6% | 28.5% |

Source: MERI, prepared from "Profile of Freshmen Entering Colorado State Community Colleges," submitted by participating institutions to the office of the State Director of Community Colleges.

academic year; it will be augmented by fees only in a sufficient amount to defray the costs for which fees are charged.

The student charges (tuition and fees) for Colorado community colleges in the 1967-68 school year are shown in Table 4.

Table 4

STUDENT CHARGES FOR COLORADO COMMUNITY COLLEGES

| College | Colorado Resident | | Out-of-State |
|---|---|---|---|
| | In-District | Non-District | |
| Aims | $120 | $120 | n.a. |
| Arapahoe | 205 | 355 | n.a. |
| Colorado Mountain | 250 | 400 | $900 |
| Lamar | 261 | 336 | 531 |
| Mesa | 210 | 360 | 705 |
| Northeastern | 150 | 255 | 450 |
| Otero | 210 | 285 | 630 |
| Rangely | 210 | 315 | 615 |
| Trinidad | 186 | 186 | 687 |

n.a. = not available.

Source: Office of the Colorado State Director of Community Colleges.

The table indicates that substantial variation in student charges exists among the Colorado community colleges, ranging from $120 a year at Aims to $261 at Lamar for in-district students; $120 annually at Aims to $400 at Colorado Mountain for Colorado non-district residents; and $450 at Northeastern to $900 at Colorado Mountain for out-of-state students.

Because of the room and board costs, enrollments are likely to be lowered in some of the existing colleges even if they join the state system and offer lower tuition and fees. However, the impact of the new

community colleges is likely to be greater on some of the local colleges electing to continue outside the state system, for students will be required to pay both higher student charges and room and board costs.

## Community College Occupational Programs and Enrollments

An analysis of total day enrollments of Colorado community colleges indicates that there has been substantial growth in enrollment since 1963 and that all community colleges offer both academic and occupational programs, though the emphasis on occupational programs varies with the college. In 1963 the total day enrollment in the state was 3,485. Since then, as shown in Figure 7, this enrollment has increased steadily each year toward a 1967 enrollment of 9,038, representing a four-year increase of 159.3 percent.

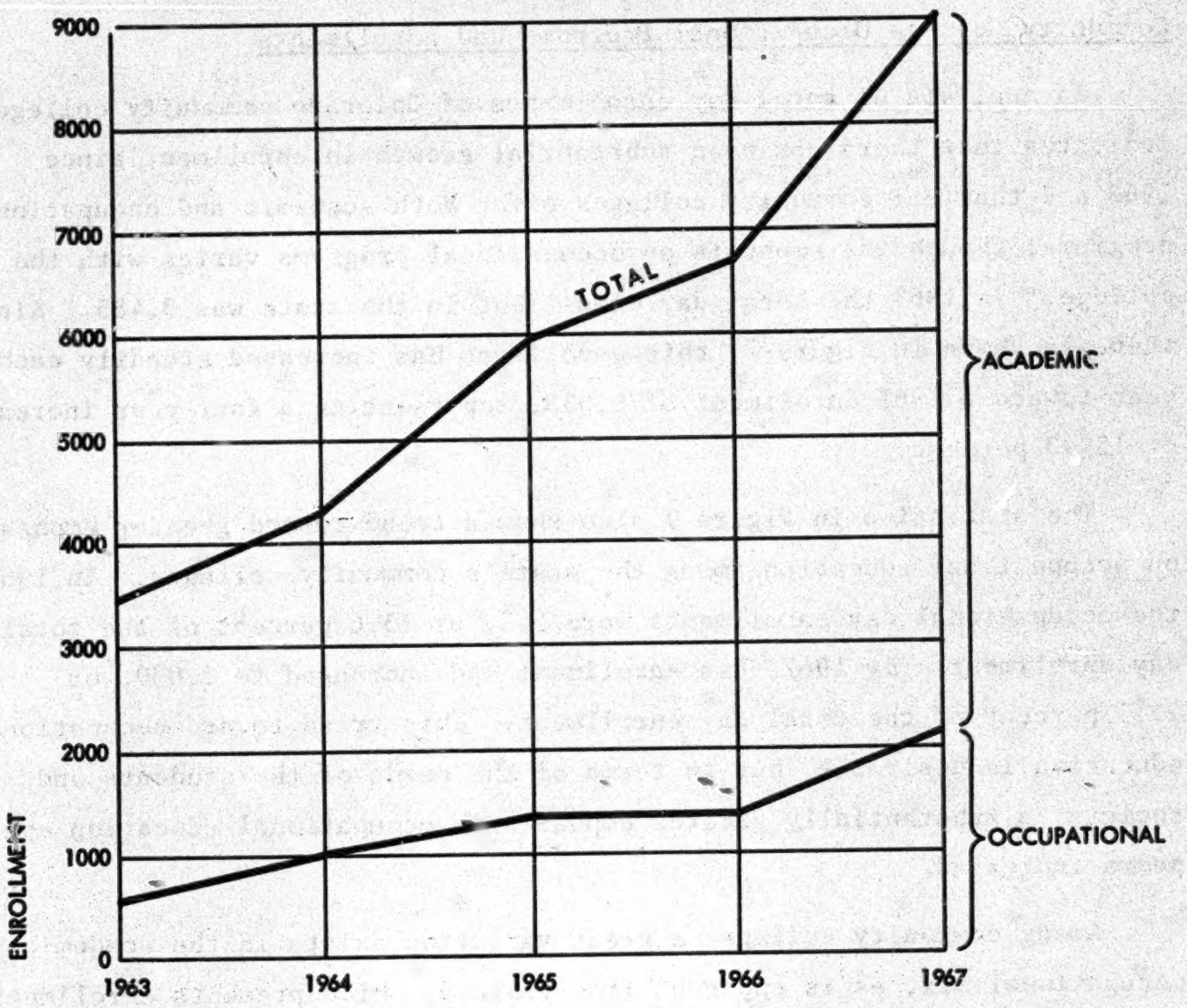
The statistics in Figure 7 also show a trend toward greater emphasis on occupational education among the state's community colleges. In 1963 the occupational day enrollments were 542, or 15.6 percent of the total day enrollment. By 1967 this enrollment had increased to 2,030, or 22.5 percent of the total day enrollment. This trend toward occupational education is desirable, but in terms of the needs of the students and society, a substantially greater emphasis on occupational education appears indicated.

Among community colleges a great variation exists in the academic-occupational mix, as is apparent from Table 5, which presents enrollment in occupational programs as a percent of day enrollment. An analysis of the table reveals (1) in 1967 the percent of occupational enrollment ranged from 8.7 percent at Mesa College to 46.2 percent at Trinidad; (2) over the five-year period 1963-67 Trinidad has been consistently strong in occupational enrollments in relation to the state as a whole; (3) Rangely College has grown in occupational emphasis during these five years, from 14.6 percent in 1963 to 42.7 percent in 1967, a growth which can be attributed largely to its career pilot and dental hygiene programs.

What the statistics in Table 5 mean in terms of specific programs is evident from Table 6, which shows all occupational programs enro ling ten or more students.

Figure 7

## ACADEMIC AND OCCUPATIONAL DAY ENROLLMENTS COLORADO COMMUNITY COLLEGES 1/ FALL 1963-1967




| | 1963 | 1964 | 1965 | 1966 | 1967 |
|---|---|---|---|---|---|
| Enrollment (head count): | | | | | |
| Academic | 2,943 | 3,352 | 4,596 | 5,250 | 7,008 |
| Occupational | 542 | 1,017 | 1,322 | 1,376 | 2,030 |
| Total | 3,485 | 4,369 | 5,918 | 6,626 | 9,038 |
| Percent of Enrollment | | | | | |
| Academic | 84.4 | 76.7 | 77.7 | 79.2 | 77.5 |
| Occupational | 15.6 | 23.3 | 22.3 | 20.8 | 22.5 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

1/ Fall term head count of day students does not include adult education.

Sources: 1963 through 1966 enrollment data from Colorado Department of Education. 1967 enrollment data from individual community junior college reports to Office of State Director of Community Colleges.

Table 5

ENROLLMENT IN OCCUPATIONAL PROGRAMS AS A
PERCENT OF DAY ENROLLMENT
IN COLORADO COMMUNITY COLLEGES
FALL TERMS 1963-1967

| College | 1963 | 1964 | 1965 | 1966 | 1967 |
|---|---|---|---|---|---|
| Aims | -- | -- | -- | -- | n.a. |
| Arapahoe | -- | -- | -- | 19.7 | 11.8 |
| Colorado Mountain (East) | -- | -- | -- | -- | 43.1 |
| Colorado Mountain (West) | -- | -- | -- | -- | 40.7 |
| Lamar | 22.8 | 32.4 | 22.7 | 19.3 | 29.9 |
| Mesa | 5.0 | 11.8 | 11.7 | 11.9 | 8.7 |
| Northeastern | 5.0 | 17.2 | 17.5 | 17.5 | 24.9 |
| Otero | 14.7 | 20.7 | 21.2 | 21.2 1/ | 22.8 |
| Rangely | 14.6 | 29.7 | 23.0 | 35.6 | 42.7 |
| Trinidad | 44.6 | 50.3 | 44.8 | 42.3 | 46.2 |
| State Average | 15.6 | 23.3 | 22.3 | 20.8 | 22.5 |

1/ Includes some adult education.

Sources: 1963-1966: "Community Junior Colleges," Colorado State Department of Education.
1967: MERI, from "Fall Report from Community Junior Colleges," State Offices of Community Colleges and Occupational Education.

Table 6

## OCCUPATIONAL PROGRAMS IN COLORADO COMMUNITY COLLEGES[1/]

**Arapahoe Junior College**

| | |
|---|---|
| Law enforcement technology | 73* |
| Secretarial science | 15 |
| Medical office assistant | 11 |
| Engineering related technologies | 10 |

**Colorado Mountain College, East Campus**

| | |
|---|---|
| Office management | 24* |
| Secretarial science | 21* |
| Auto mechanics | 16* |
| Drafting and design technology | 16 |
| Electronics technology | 16* |

**Colorado Mountain College, West Campus**

| | |
|---|---|
| General business | 20 |
| Secretarial science | 16 |
| Commercial art | 13 |
| Commercial photography | 11 |

**Lamar Junior College**

| | |
|---|---|
| Auto mechanics | 35 |
| Agricultural business | 29 |
| Data processing technology | 23 |
| Secretarial science | 22 |
| Cosmetology | 18 |
| Electronics technology | 17 |

**Mesa College**

| | |
|---|---|
| Registered nursing | 58 |
| Data processing technology | 39 |
| Secretarial science | 22 |
| Practical nursing | 18 |
| Travel and recreation management | 18 |
| Medical office assistant | 10 |

**Northeastern Junior College**

| | |
|---|---|
| Agricultural business | 112 |
| General business | 103 |
| Secretarial science | 58 |
| Office occupations | 47* |
| Electronics technology | 35 |
| Auto mechanics | 30 |
| Civil engineering technology | 28 |
| Practical nursing | 18 |
| Drafting and design technology | 15 |

**Otero Junior College**

| | |
|---|---|
| Data processing technology | 36 |
| Secretarial science | 32 |
| General business | 20 |
| Civil engineering technology | 12 |
| Drafting and design technology | 11 |
| Aviation | 10 |

**Rangely College**

| | |
|---|---|
| Career pilot | 48 |
| Dental hygiene | 40 |

**Trinidad State Junior College**

| | |
|---|---|
| General business | 121 |
| Gunsmithing | 83 |
| Law enforcement technology | 66 |
| Auto mechanics | 55 |
| Data processing technology | 59 |
| Electronics (42) and electronics technology (7) | 49 |
| Welding | 35 |
| Auto body maintenance | 29 |
| Building trades | 28 |
| General clerical | 28 |
| Cosmetology | 25 |
| Drafting and design technology | 25 |
| Practical nursing | 23 |
| Computer maintenance technology | 22 |
| Library science technology | 10 |

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* Denotes over 50 percent part-time students.

1/ Includes only programs with 10 or more enrollments.

## Physical Facilities

In the past, most junior colleges in Colorado have been poorly located in relation to population. Some have been established on sites that do not lend themselves to effective campus development. And space in some instances has been badly planned to house educational programs, resulting in ineffective space utilization.

It would be very easy to be critical of some of the facility planning, or lack of it, that has occurred in Colorado in the past three decades. The same criticism could be made of virtually every state and most campuses in the nation. But to be critical would be to overlook the dedication and courage of those who founded junior colleges in Colorado when a substantial amount of local initiative was required. From the standpoint of statewide master planning, the chief advantage of analyzing current status is to provide guidance for the future.

As part of the study an analysis was made of the physical facilities, but only a brief summary is given here, in Table 7, since a very comprehensive study, specifically oriented toward space and space utilization, conducted by the Educational Planning Service at Colorado State College, will be forthcoming soon.

In space utilization, as well as staff utilization, national studies have shown that there are substantial economies related to enrollment size. The data examined during this study indicate that, in general, colleges with larger enrollments, such as Mesa, Northeastern, and Trinidad, are able to utilize their building space more effectively than a college of small enrollment like Rangely. A notable exception is a well attended program, such as Rangely's dental hygienist program, where specialized facilities may receive heavy use. These generalizations were confirmed through application of the Heldman-Baxter standards to the data received from the colleges.[1/] Application of these standards also

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1/ "Heldman-Baxter standards" is a term applied to space standards for higher educational facilities. They involve room use factors (e.g., 35 day hours a week, which represents 100 percent use for lecture classroom, 29 day hours a week for a laboratory or shop);

suggests that there is substantial need for coordinated program and space planning to achieve most effective utilization of staff and space--including the allocation of programs to ensure enrollments of economically feasible size and the planning of space to meet class needs efficiently and to achieve optimum use.

## State Colleges with Community College Types of Programs

No analysis of the current status of community college and occupational education in Colorado would be complete without directing attention to the programs of Metropolitan and Southern Colorado state colleges. Both belong to the system of state general colleges under the jurisdiction of the Board of Trustees of the State Colleges. At present both offer occupationally oriented lower division programs normally associated with community colleges.

### Metropolitan State College

Metropolitan State College was created by an act of the Colorado General Assembly in 1963 (H.B. 349) which specified that it would become part of the state general college system. Among the several objects and purposes of the college, the act creating it stated it would "offer programs of instruction in semi-professional technical education in science and engineering technology on a terminal basis, either on its

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student station (e.g., seat or work station) utilization factors; and normal capacity factors (e.g., number of student stations that a given room space will accommodate for a specific type of educational program). Such standards can become a valuable tool in the planning of space to house educational programs efficiently. The Heldman-Baxter standards were developed for Colorado during studies over the past several years by Herbert Heldman and A. W. Baxter, Jr. For more detail, see Association of State Institutions of Higher Education in Colorado, Guideline Procedures and Criteria for Campus Development and Capital Outlay Planning, prepared by the Association in cooperation with Taylor, Lieberfeld, and Heldman, Inc., April 1964 (multilithed).

Table 7

SUMMARY OF INFORMATION ON PHYSICAL FACILITIES
COLORADO COMMUNITY COLLEGES: FALL 1967[1/]
(Building Areas in Gross Square Feet)

Colorado Mountain College, East Campus--194 acres

Two "relocatable" buildings (44,079); includes one dormitory (18,672).

Colorado Mountain College, West Campus--560 acres

Three "relocatable" buildings (62,751); includes two dormitories (18,672 each).

Lamar Junior College--109 acres

Twelve buildings (134,069), seven permanent (107,465), including a dormitory complex (51,000). Five temporary buildings (26,604) including four rentals and a trailer.

Mesa College--45 acres

Thirteen buildings (331,778), ten permanent (323,478), including four dormitories (125,400). Three temporary or semi-permanent buildings (8,300), including one leased structure.

Northeastern Junior College--65.5 acres

Twenty buildings (368,950), eighteen permanent (367,573), including five residential halls (104,780). Two temporary buildings (1,377), both residences.

Otero Junior College--32 acres

Eleven buildings (196,665), seven permanent (172,548), including one dormitory complex (36,084). Four temporary buildings (24,117). In addition, ten old residences, to be demolished in planned future expansion.

Rangely College--20 acres

Ten buildings, all permanent (120,325), including four dormitories (55,767).

Trinidad State Junior College--26 acres

Twelve buildings, all permanent (290,268), including dormitory facilities (88,719). In addition, college owns 18 homes constructed over time by student classes enrolled in building trades program and available for rental by faculty and staff.

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1/ Excludes Aims and Arapahoe.

Source: Individual colleges.

own campus or through contracts with public school districts in the City and County of Denver and in the counties of Adams, Arapahoe, and Jefferson."1/

One of the seven objectives developed by the college administration and teaching staff to implement the objects and purposes of the law was the following: "To offer two-year terminal programs leading to the Associate and Applied Science degree. These programs will be designed to provide students with the occupational competence needed for employment or to operate a business in their chosen field. Other vocational-technical curricula of various lengths will be developed to meet particular occupational needs. The college will maintain liaison with the business and industrial community, and the curricula will be responsive to the needs of the metropolitan area."2/

Metropolitan State College became operational in 1965-66 with a fall enrollment of 1,189. In 1966, its enrollment had increased 105.5 percent to 2,443. In 1967 the college administration reported an enrollment of 3,591, which included 2,911 freshmen, 565 sophomores, 90 juniors, 7 seniors, and 18 special students. It is planned that the college will become fully operational as a four-year institution by the 1968-69 fiscal year.

Of its fall 1967 enrollment the college reported that 1,211 students, slightly more than one-third of its student body, were enrolled in 18 different programs with completions below the baccalaureate degree. The programs are shown in Table 8 in rank order of enrollment.

Since Metropolitan State College is in the process of planning for a permanent campus, its role in occupational education and the programs it will offer are particularly important at this time. The position of the Commission on Higher Education is clear, namely: "As opportunities for post-secondary training in technical and occupational fields become

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1/ Metropolitan State College, Bulletin 1967-68, catalogue issue, p. 11.

2/ Ibid., p. 12.

available in Denver area community and technical colleges, the Commission recommends that the responsibility for such programs of two years or less should be assumed by the two-year colleges. Metropolitan State College should continue to develop programs on the baccalaureate level in occupational and technical fields."[1/]

Table 8

OCCUPATIONAL PROGRAMS IN METROPOLITAN STATE COLLEGE

| Program | Student Enrollments |
|---|---|
| Aerospace technology, professional pilot | 194 |
| Data processing | 121 |
| Management | 116 |
| Electrical/electronic engineering technology | 109 |
| Law enforcement and police science | 98 |
| Registered nursing | 97 |
| Mechanical engineering technology | 85 |
| Drafting engineering technology | 75 |
| Accounting | 74 |
| Secretarial | 65 |
| Marketing | 61 |
| Civil engineering technology | 42 |
| Quality assurance technology | 20 |
| Aerospace technology, aircraft mechanics | 14 |
| Medical office assistant | 14 |
| Office management | 12 |
| Health services | 8 |
| X-ray technology | 6 |

1/ Strengthening Higher Education in Colorado, A Summary of the Recommendations of the Colorado Commission on Higher Education, February 1967, p. 16.

## Southern Colorado State College

What is now Southern Colorado State College began in 1933 as San Isabel Junior College of Pueblo, changed its name in 1934 to Southern Colorado Junior College, and to Pueblo Junior College in 1937, when the Pueblo County Junior College District was formed. In 1933, its opening year, the college enrolled 63 students, 31 full-time and 32 part-time. By the 1940-41 school year it had grown to 310 students, 282 full-time and 28 part-time. In 1962-63, its last year as a junior college, Pueblo had a daytime enrollment of 1,435 (1,307 full-time and 128 part-time) and an adult education enrollment of 1,172, for a total enrollment of 2,607.[1/] In its 33-year history Pueblo College had become the largest of the state's junior colleges and was recognized nationally for its diversified program designed to meet community educational needs. It also had constructed the Orman Campus to accommodate this program effectively.

Southern Colorado State College was established by the Colorado General Assembly in 1961. It became operational as a four-year state college in 1963 with an enrollment of 3,196. By 1966-67 its enrollment had grown to 4,649. Preliminary estimates indicate that its 1968-69 enrollments will be 6,068, representing a full-time equivalent (FTE) enrollment of 5,061.[2/]

A 1962 projection had forecast for Southern Colorado State College an FTE enrollment of 5,000 by 1975. Growth in enrollment has greatly exceeded these expectations. It now is expected that by 1975 the college may have an FTE enrollment of 10,000, including approximately 9,000 undergraduate and 1,000 graduate students.[3/] It is for this

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1/ Colorado State Department of Education, Community Junior Colleges, 1958-59 through 1964-65, Denver, 1965, pp. 9 and 13. The 1933-34 and 1940-41 enrollment statistics are from Harold A. Hoeglund, History of Pueblo College, Pueblo, Colorado, 1933-1963, p. 26.

2/ Data provided by the Office of the Secretary for the Trustees of the State Colleges in Colorado.

3/ Caudill Roulett Scott, Southern Colorado State College Comprehensive Campus Plan, August 1967, p. 6.

level of enrollment that the new campus has been planned on over 800 acres on the outskirts of Pueblo.

The projected space requirements for the new campus are 2,173,000 gross square feet, including 275,000 for vocational-technical and an additional 21,000 for health arts. The attractive new campus is under construction. The library-classroom building, science building for chemistry and geology, and a residence hall complex are now being used. The life science building is expected to be completed in 1968. It is planned to use both the new Belmont Campus and the old Orman Campus for the next several years.

The ultimate intent, however, is to move out of the Orman Campus completely, making it available for other uses. The buildings on the Orman Campus approximate 240,000 gross square feet, of which between 220,000 and 225,000 would be considered permanent structures. These include as major elements the following buildings and approximate gross square footages.

| | Square Feet |
|---|---|
| Administration building | 27,800 |
| Arts and sciences building and the gymnasium | 55,600 |
| Vocational-technical building | 64,000 |
| Student center | 46,500 |
| Cuthbertson Residence Hall | 23,800 |

The residence hall will accommodate 103 students.

Its 1967-68 catalogue describes the college as unique among four-year institutions because of its junior college program, and further states, "With a junior college structured within the four-year state college, Southern Colorado State College serves a wide spectrum of the educational needs of today's youth." In its junior college curricula it identifies 13 academic and 18 vocational and technical two-year programs, but footnotes its vocational and technical offerings to

indicate that practical nursing is a one-year program and certain other vocational and technical programs offer a third year of advanced work.

In the fall of 1967 the college reported an enrollment of 827 students in 18 occupational programs. The programs are shown in Table 9 in rank order of enrollment. In addition to the enrollments shown in the table, the college reported 16 enrolled in apprenticeship programs.

Table 9

OCCUPATIONAL PROGRAMS IN SOUTHERN COLORADO STATE COLLEGE

| Program | Student Enrollments |
|---|---|
| Electronics technology | 121 |
| Registered nursing | 115 |
| Automobile mechanics and technology | 108 |
| Electronic data processing | 86 |
| Practical nursing | 70 |
| Civil engineering technology | 48 |
| Diesel mechanics and technology | 47 |
| Agriculture | 42 |
| Home economics | 42 |
| Welding | 40 |
| Mechanical engineering technology | 38 |
| Air conditioning and refrigeration technology | 21 |
| Machine shop | 19 |
| Woodwork and building construction | 13 |
| Metals technology (engineering aide) | 6 |
| Air conditioning and refrigeration servicing | 5 |
| Engine machining and rebuilding | 5 |
| Major appliance servicing | 1 |

A chief concern is whether a junior college program, particularly its vocational-technical program, can prosper within the framework of a four-year (and eventually at least a five-year) college or university setting. Apart from the college administration itself, no educator with whom the question was discussed, including MERI's four national consultants on this study, answered the question affirmatively. Objective evidence appears to support the view that Pueblo College should be re-established as a state community college and that the role of Southern Colorado State College should be similar to that of Metropolitan State College. In relation to its lower division enrollment, its occupational education enrollments, as shown in Table 9, already are below those of Metropolitan State College as well as those of the largest community college in the southeast portion of the state, namely Trinidad State Junior College. In the last two years of Pueblo College, federally reimbursed vocational-technical enrollments increased from 402 in 1960 to 556 in 1962, an average increase in enrollments of 77 a year. Since 1963, Southern Colorado State College's enrollments in these programs have increased from 614 in 1963 to 657 in 1967; this represents not quite 11 students a year, and is in sharp contrast to Southern Colorado State's total enrollment growth. Moreover, it seems illogical that one of the state's three largest concentrations of population, which is destined to experience a substantial population growth in the next twenty to twenty-five years, should be without a community college whose chief mission is and will continue to be meeting diversified community educational needs.

## Occupational Education

In the discussion of community college programs and enrollments, as well as those of Metropolitan State College and Southern Colorado State College, much of the emphasis has been upon occupational education. The reason is that while a sound community college program should consist of several diversified elements, the key ingredient is vocational-technical education. Though community colleges appear destined to play an increasingly important role in meeting vocational-technical needs, this type of education has and undoubtedly will

continue to encompass substantially more than community college education. Moreover, as defined earlier, occupational education is a broader term than vocational-technical education and applies to all programs of instruction below the baccalaureate level designed to acquaint persons with or prepare them for the world of work. Thus occupational education includes orientation and pre-vocational programs in both the elementary and secondary schools.

Thoughtful educators familiar with Colorado schools indicate that there is a great need for increased emphasis on vocational education at all levels. Supportive of this position is a recent study published by the Vocational Education Research Coordinating Unit at Colorado State University.[1/] In that statewide study of the opinions and attitudes of public school superintendents and high school principals, only 27 percent of the superintendents and 42 percent of the principals responding considered their guidance and counseling programs to be adequate, and three out of four in both groups reported their present vocational education programs to be unsatisfactory in relation to student needs. The import of these views is that most of the nation's youth do not continue their formal education beyond high school. The retention rates through high school have improved significantly in the past three decades; however, the U.S. Office of Education reports that for each 1,000 students who were 5th graders in 1957-58 there were only 710 high school graduates in 1965 and 378 first time college students. In other words, approximately 30 percent did not complete high school and over 60 percent did not enter college.[2/]

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1/ LeRoy B. Cavnar, Attitudes of Colorado School Administrators toward Guidance, Counseling, and Vocational Education, The Vocational Education Research Coordinating Unit, Colorado State University, Fort Collins, Colorado, March 1967 (Revised).

2/ U.S. Office of Education, Digest of Educational Statistics, 1966, p. 7.

Through the use of a similar progression concept, it has been estimated that in Colorado approximately 40,000 youth attain age for high school graduation annually.[1/] Of these:

10,000 do not graduate from high school
17,500 do not go on to college
3,000 will complete one year or less of college
600 will complete two years or less of college
400 will complete three years or less of college
31,500 total

These statistics appear to support convincingly the contention of educators that there is great need for occupational education, including not only post-secondary and adult vocational-technical education, but a strong program on the secondary level as well.

Shown below is a summary of enrollment in vocational classes by level of program for the past three years:[2/]

| Level of Program | 1964-65 | 1965-66 | 1966-67 |
|---|---|---|---|
| Secondary | 16,884 | 20,901 | 22,849 |
| Post-Secondary | 4,819 | 7,302 | 8,812 |
| Adult | 37,887 | 43,790 | 45,037 |
| Persons with Special Needs | 730 | 1,320 | 1,329 |
| Total | 60,320 | 73,313 | 78,027 |

The distribution of enrollments in vocational-technical education by type of program and level of education is shown in Table 10. The table indicates that the majority of enrollments were in adult programs,

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1/ State Board for Vocational Education, Vocational Education Needs of the People of Colorado, August 1966, p. 7 (mimeographed report).

2/ State Board for Community Colleges and Occupational Education, Division of Occupational Education, Annual Report, 1967, p. 23.

Table 10

ENROLLMENT IN VOCATIONAL-TECHNICAL EDUCATION IN COLORADO
BY TYPE AND LEVEL OF PROGRAM
1966-1967

| Type of Occupational Program | Secondary | Post-Secondary | Adult | Persons with Special Needs[1/] (secondary) | Total | Percent of Total |
|---|---|---|---|---|---|---|
| Agriculture | 2,640 | 82 | 714 | 124 | 3,560 | 4.6% |
| Distributive education | 1,853 | 382 | 5,491 | 124 | 7,850 | 10.1 |
| Health | 5 | 527 | 550 | 0 | 1,082 | 1.4 |
| Homemaking | 11,798 | 0 | 16,717 | 76 | 28,591 | 36.6 |
| Occupational homemaking | 145 | 101 | 794 | 102 | 1,142 | 1.5 |
| Business and office | 4,154 | 3,723 | 5,986 | 745 | 14,608 | 18.7 |
| Technical | 0 | 1,775 | 1,219 | 0 | 2,994 | 3.8 |
| Trades and industry | 2,254 | 2,222 | 13,566 | 158 | 18,200 | 23.3 |
| Total | 22,849 | 8,812 | 45,037 | 1,329 | 78,027 | 100.0% |
| Percent of Total | 29.3% | 11.3% | 57.7% | 1.7% | 100.0% | |

1/ Those who cannot meet the standards of normal vocational programs.

Source: State Board for Community Colleges and Occupational Education, Division of Occupational Education, Annual Report, 1967, p. 24.

followed in order by secondary education, post-secondary, and persons with special needs, i.e., those who cannot meet the standards of normal vocational programs. The highest enrollments by type of program were homemaking, trades and industry, business and office occupations, and distributive education.

Substantial variation in occupational emphasis existed by educational level. On the secondary level the three leading enrollments were in homemaking, business and office occupations, and agriculture; at the post-secondary level, in business and office occupations, trades and industry, and technical occupations; and at the adult education level, in homemaking, trades and industry, and business and office occupations, followed closely by distributive education. The statistics show that vocational agriculture is chiefly a high school program, and trades and industry chiefly an adult program.

Since the high school level appears to be a particularly critical one for substantial numbers of students, special attention was given to this level. An analysis was made of the grade structure of Colorado high schools, the sizes of their enrollments, and the number of federally funded vocational-technical programs in these schools. The results are presented in Tables 11 and 12. The statistics in Table 11 indicate that over 75 percent of the state's high schools have either a 9-12 or 7-12 grade structure, with 39.3 percent in the former category and 36.3 percent in the latter. Only 57 schools have a 10-12 grade structure, and 30 of these are in the Denver metropolitan area.

Many of the state's high schools are small. Half of them have enrollments under 250, and almost one in four has an enrollment under 100. Only 40 of the state's high schools have enrollments over 1,000, and 27 of these are in the Denver metropolitan area.

The information in Table 12 illustrates the impact of high school enrollment size upon the vocational-technical offerings. In the 56 high schools with enrollments under 100, there were only 24 programs, 22 of them either in agriculture or homemaking. In the 61 high schools in the 100-249 enrollment classification, there were 64 programs, 55 of them in either agriculture or homemaking. Though the diversification

of programs is better among the larger schools, even here the emphasis upon vocational education does not appear to be particularly strong. The statistics support the position of district superintendents and high school principals, previously cited, that most programs are not meeting the vocational-technical needs of the students enrolled.

Table 11

NUMBER OF COLORADO HIGH SCHOOLS BY
GRADE STRUCTURE AND SIZE OF ENROLLMENT
FALL 1966

| | Total Number of Schools | Percent of Total |
|---|---|---|
| **Grade Structure** | | |
| 7-12 | 85[1/] | 36.3% |
| 9-12 | 92 | 39.3 |
| 10-12 | 57 | 24.4 |
| Total Number of Schools | 234 | 100.0% |
| **Enrollment** | | |
| 0-99 | 56 | 23.9% |
| 100-249 | 61 | 26.1 |
| 250-499 | 48 | 20.5 |
| 500-999 | 29 | 12.4 |
| Over 1,000 | 40 | 17.1 |
| Total Number of Schools | 234 | 100.0% |

1/ Includes two schools with enrollments in grades 9 and 10 only.

Source: MERI, developed from Colorado Education Directory, 1966-67.

Table 12

TYPE AND NUMBER OF FEDERALLY FUNDED SECONDARY VOCATIONAL-TECHNICAL PROGRAMS IN COLORADO BY SIZE OF HIGH SCHOOL ENROLLMENT FALL 1966

| | Number of Programs by Size of High School Enrollment | | | | | | |
|---|---|---|---|---|---|---|---|
| Program | (56) 0-99 | (61) 100-249 | (48) 250-499 | (29) 500-999 | (40) Over 1,000 | (234) Total | Percent of Total |
| Agriculture | 12 | 20 | 16 | 12 | 3 | 63 | 17.5% |
| Business | 1 | 4 | 16 | 18 | 17 | 56 | 15.5 |
| Distributive education | -- | -- | 6 | 15 | 30 | 51 | 14.2 |
| Homemaking | 10 | 35 | 32 | 39 | 27 | 143 | 39.7 |
| Occupational homemaking | -- | 2 | 2 | 2 | 5 | 11 | 3.1 |
| Technical and industrial | 1 | 3 | 5 | 12 | 15 | 36 | 10.0 |
| Total | 24 | 64 | 77 | 98 | 97 | 360[1/] | 100.0% |
| Percent of Total | 6.7% | 17.8% | 21.4% | 27.2% | 2 9% | 100.0% | |

Note: Numbers in parentheses indicate the number of schools in each size category.

1/ Excludes special education programs.

Source: MERI, from Pupil Attendance Reports, 1966 obtained from State Office of Occupational Education.

Substantially increased emphasis upon vocational-technical education on the secondary level appears to be required. The State Division of Occupational Education in Colorado points out that, whereas nationally the secondary vocational-technical enrollments represented 27 percent of the total secondary enrollments in 1966-67, in Colorado they were only 17 percent of the secondary enrollment. With increased emphasis upon vocational-technical education, by 1970-71 national secondary vocational enrollments are expected to be 30 percent of total secondary enrollments. To meet the national average by that time it will be necessary for Colorado almost to double its 1966-67 enrollment.1/

A key question facing the State Board is how resources can be mobilized most effectively to meet vocational-technical education needs. One obvious answer, already implied, is the consolidation of small high schools into larger units. However, this objective is not the responsibility of the State Board, though the Board could lend support to such a move. Moreover, history suggests that effective consolidation of school units is a slow process. Vocational-technical education needs are too pressing to await this process. Of course, consolidation may facilitate but it does not ensure program diversification. What is needed is a commitment to programs designed to meet educational needs, a commitment by all concerned with the education of youth, and endorsed by funding. Additionally, there is a need for innovative approaches, particularly in states like Colorado, to solve the problems of meeting vocational-technical needs of students residing in sparsely settled areas.

Colorado Springs Program

A comprehensive occupational education program below the collegiate level would include orientation and pre-vocational experiences in the elementary and junior high schools; a continuation of these experiences

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1/ State Board for Community Colleges and Occupational Education, Division of Occupational Education, Annual Report, 1967, pp. 25-26.

in the senior high school and, in addition, vocational education for entry job placement; and an adult vocational education program.

The Colorado Springs Public Schools supports the philosophy of the comprehensive occupational education program and is recognized as having one of the better programs in the state. Therefore, as part of this study, discussions were held with the superintendent of schools and with the director of the Department of Industrial Arts, Vocational, and Adult Education. A brief summary of the Colorado Springs program follows, as illustrative of the concept.

In addition to individual counseling and guidance, as part of its program the system has introduced an occupations and guidance unit of several weeks' duration as an integral portion of all 9th grade civics instruction. The experiences in the unit center around personal qualifications and the world of work.

Over a period of time the system has developed a strong program in industrial arts and vocational education. At the junior high level all boys receive one year of exploratory experience in electricity, general metals, power mechanics, crafts, mechanical drawing, and woodworking, and may elect to take these courses for an additional two semesters.

In the senior high program, industrial arts courses include automotive, electronics, general crafts, general metals, graphic arts and printing, machine shop, mechanical drawing, woodworking, and general industrial arts. The senior high school vocational education program includes distributive education (cooperative education); printing; office occupations (accounting, general office, secretarial); and trade and industrial education (auto mechanics, cabinetmaking, diversified occupations, drafting, electronics, machine shop, and printing). A vocational work-study program also has been organized to make it possible for economically disadvantaged vocational high school students to remain in school to complete their vocational training.

In 1966-67 the enrollments in junior high school industrial arts were 2,822; in senior high school industrial arts 1,539; in vocational programs 770, with the heaviest concentration in the office occupations.

The system also has an extensive adult education program, including offerings under the Manpower Development Training Act (MDTA). MDTA offerings have included electronics assembler, auto body repairman, and practical nursing programs.

## Boulder Valley Area Vocational-Technical Center

Organized under a Board of Cooperative Services, basically to serve the Boulder Valley School District and the St. Vrain Valley School District, the Boulder Valley Area Vocational-Technical Center is the only facility in the state other than a junior college designated as an area vocational school. It is administered by the Boulder Valley School District. A handsome, modern facility, it consists of two buildings totaling slightly over 70,000 gross square feet. The program is designed primarily to supplement and enrich comprehensive high school programs. In 1967 it offered programs in auto body and fender, auto mechanics, carpentry, cosmetology, data processing, electronics, graphic arts, machine shop, office occupations, printing, technical drafting, and welding. Its day enrollment totaled 337 students--295 high school and 42 post-high school students. The high school students spend one-half day at the center and one-half day at their schools of regular attendance.

## Emily Griffith Opportunity School

No overview of Colorado's current state of occupational education can be made without tribute being paid to the Opportunity School operated by the Denver Public School System.

Since its opening in 1916, the school has offered tuition-free non-college, adult, vocational, and technical education courses to approximately 900,000 enrollees at its main building and fifty "Opportunity Centers" around the city of Denver, night and day throughout the year.

The founder of the school, Miss Emily Griffith, envisioned a school where an adult wanting training of any type could obtain it without cost. A yearly average of more than 30,000 men and women take

advantage of the opportunities the school offers to enroll in approximately 300 subjects in eight broad areas.

Denver residents are enrolled tuition-free. There is no entrance requirement except that the enrollee be over age 16. Nonresidents, who are admitted to class only when there are no resident applicants for the class, pay a small tuition fee per hour of instruction.

Approximately 570 Denver citizens--professionals, nonprofessionals, employers, and employees--comprise 79 advisory committees whose recommendations assure that the school provides students with needed skills and knowledge required in the jobs they seek.

The Opportunity School has given high school diplomas to approximately 1,600 people of all ages; it has taught the foreign-born to speak English and prepared still more for citizenship; it has taught thousands of students new skills that have boosted their earning power; it has offered high school students half-day vocational education programs; and has counseled, guided, and tested thousands of students, and found jobs for others.

The school operates a noncommercial educational TV station which enables its many viewers to "take" Opportunity School extension courses in their homes.

Much of the ground to be covered by Denver's new community college has earlier been prepared by Denver's pioneering Opportunity School.

## Proprietary Schools

The growth of proprietary schools in the state supports the position that publicly financed institutions are not meeting the increased demand for vocational-technical education. Offerings at proprietary schools are often similar to those available at well equipped community colleges and area vocational schools, including courses designed to prepare individuals for employment in business, technical and industrial fields, cosmetology, health services, and other areas.

In its role as state board for occupational education, the Board plays a major part in approving proprietary schools. In fall 1967 a report from its proprietary schools division indicated that there were 70 proprietary schools approved under the Colorado Proprietary School Act of 1966, including art schools (4), auto mechanics (4), business and automation (18), medical-dental assistants (3), radio broadcasting (2), real estate (4), technical (9), trade (12), correspondence (4), and miscellaneous (10).[1/]

These 70 schools have approximately 220 different instructional programs with an estimated 1,000 separate courses. The report states significantly: "There are more students enrolled in proprietary schools in Colorado than there are in all of the junior colleges of the state."

Among these proprietary schools, course duration ranges from 30 hours to 1,620 hours or more. Fees vary from a low of $80 to $2,590, not including the cost of books, supplies, housing, or food. Most of the schools are located in Denver and its metropolitan area.

A high proportion of students--both those enrolled in the schools operating under authorization of the State Board, as well as those in other proprietary schools--are under age 21. In a 1966 report submitted to the Legislative Committee on Education Beyond the High School, information on 20 proprietary schools (4 business, 6 beauty, 10 technical) with a total approximate enrollment of 3,592, showed that 60.1 percent of this enrollment was under age 21.

Proprietary schools offering quality education have had and will continue to have an important part to play in the total vocational education offering of the state. Their success is indicative of not only the great need for vocational education in the state, but also the desire for such education on the part of those who have been able to afford it.

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1/ State Board for Community Colleges and Occupational Education, Proprietary Schools Division, "Progress Report, Technical and Special Programs," October 1967.

## Funding of Community College Education

The chief source of financial support for public higher education in Colorado is the Colorado General Fund. In the eight fiscal years from 1960-61 to 1967-68 the expenditures from this fund for all purposes has increased from $111.7 million to an estimated $256.4 million, representing an increase of 130 percent. During this same period, appropriations for higher education (including junior colleges) have ranged from 22 to 24 percent of the general fund expenditures. Specifically, general fund expenditures for higher education have increased from $24.3 million in 1960-61 to an estimated $61.9 million in 1967-68, a growth of 155 percent. These figures are presented in Table 13.

Also shown in this table are the general fund expenditures on junior colleges. They range from approximately $980,000 in 1960-61 to an estimate of slightly over $4,000,000 in 1967-68, an increase of 310 percent. The proportionately greater increase in general fund expenditures on junior colleges has been caused chiefly by two factors, namely, the substantial growth in junior college enrollments and the increase in state support from $274 per FTE student in 1960-61 to $500 per FTE student beginning in 1965-66.

The increasing costs of community college education and the shifting sources of support are indicated in Table 14. During the seven-year period from 1958-59 through 1965-66 the current operating expense per FTE student increased from $561 to $715, representing a growth of 27.5 percent. During this same period the burden for current operating expenses shifted significantly from local sources to state, federal, and student sources. The great shift occurred in the drop of local support from 56 percent to 15 percent and the growth in state support from 25 percent to 57 percent.

It is apparent that as the first colleges in the state system of community colleges open in the fall and as increasingly large numbers of students enroll in state community colleges, the state's role in the support of community colleges will continue to mount not only for operating costs but for capital outlay as well.

Table 13

COLORADO GENERAL FUND EXPENDITURES
FISCAL YEARS 1960-61/1967-68
(Millions of Dollars)

| Fiscal Year | Total General Fund Expenditures | General Fund Expenditures on Higher Education[1/] | General Fund Expenditures on Junior Colleges |
|---|---|---|---|
| 1960-61 | $111.7 | $24.3 | $0.98 |
| 1961-62 | 122.9 | 27.5 | 1.07 |
| 1962-63 | 142.8 | 31.5 | 1.46 |
| 1963-64 | 155.6 | 35.5 | 1.83 |
| 1964-65 | 162.7 | 36.6 | 1.75 |
| 1965-66 | 191.8 | 44.5 | 2.66 |
| 1966-67[2/] | 222.7 | 52.6 | 3.09 |
| 1967-68[3/] | 256.4 | 61.9 | 4.01 |
| Percent Increase 1960-61 through 1967-68 | 130% | 155% | 310% |

1/ Includes junior colleges.

2/ Estimated.

3/ Appropriations.

Sources: "Colorado Budget in Brief," 1967-68; and various issues of "Community Junior Colleges," formerly published by Colorado Department of Education.

Table 14

CURRENT OPERATING EXPENSES PER FTE STUDENT
AND SOURCE OF FUNDS
COLORADO COMMUNITY COLLEGES
1958-59/1965-66

| Year | Cost per FTE | Local | State | Federal | Students[1/] |
|---|---|---|---|---|---|
| 1958-59 | $561 | 56% | 25% | 2% | 17% |
| 1959-60 | 613 | 56 | 25 | 4 | 16 |
| 1960-61 | 684 | 41 | 41 | 3 | 16 |
| 1961-62 | 656 | 43 | 39 | 3 | 15 |
| 1962-63 | 749 | 38 | 44 | 3 | 15 |
| 1963-64 | 776 | 25 | 55 | 3 | 17 |
| 1964-65 | 710 | 28 | 47 | 3 | 22 |
| 1965-66 | 715 | 15 | 57 | 6 | 22 |

Percent increase per FTE,
1958-59/1965-66 = 27.5%

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Note: Total percentages may not add to 100 due to rounding.

1/ Tuition and fees.

Source: Various issues of "Community Junior Colleges," formerly published by Colorado Department of Education.

The law specifies that "the construction, operation, and maintenance of the community and technical colleges within the state system shall be financed by the state in the same manner as are all other state institutions of higher learning."[1/]

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1/ House Bill No. 1448, p. 4.

In the fiscal year 1966-67 the total expenditure from local, state, and federal sources for vocational-technical education in Colorado was $7,752,628. Of this amount, $1,286,580 was expended for other than occupational program costs, distributed as follows: for area vocational schools $800,000, for work study $133,915, and for ancillary services $352,665. The remaining $6,466,048 was distributed among the occupational programs. Shown in Table 15 in rank order are the programs, the percent expended on each program, and the expenditure per student enrolled.

Table 15

FUNDING OF VOCATIONAL-TECHNICAL EDUCATION IN COLORADO

| Program | Expenditures ($6,466,048) | Expenditure per Student Enrolled |
|---|---|---|
| Trade and industrial | 26.8% | $ 94.82 |
| Homemaking | 20.2 | 45.94 |
| Business and office | 17.4 | 76.94 |
| Technical | 13.7 | 295.11 |
| Agriculture | 10.5 | 190.44 |
| Distributive education | 6.0 | 49.50 |
| Health services | 4.1 | 247.00 |
| Occupational home economics | 1.3 | 74.57 |
| Total | 100.0% | $ 82.87 1/ |

1/ Average.

Source: State of Colorado.

The figures in the table were developed from data submitted to the U.S. Office of Education, by the state. Such cost per student enrolled figures always must be interpreted with care, since programs are for varying lengths of time, and many costs to a district or institution are not

included. However, the figures do suggest, in terms of the number of students served, that health services, technical education, and agriculture are relatively expensive programs, whereas homemaking and distributive education are relatively inexpensive.

Colorado's history of supporting vocational-technical education from the state level has not been particularly praiseworthy. The statistics in Table 16 show that during the five-year period from 1960-61 through 1964-65 the proportion of state support for vocational education in Colorado was consistently and substantially below state support nationally, an average of 13.4 percent in contrast to 34.6 percent. In 1966-67 the state's proportion fell slightly below 10 percent.[1/] Leaning heavily upon local support has the obvious disadvantage of placing the burden on the property tax and tending to favor wealthier districts.

Table 16

EXPENDITURES FOR VOCATIONAL EDUCATION
BY SOURCE OF FUNDS
COLORADO AND ALL STATES
1961-1965

| Year | Colorado Expenditure (000's) | Source of Funds (percent) | | | Expenditure, All States (000's) | Source of Funds (percent) | | |
|---|---|---|---|---|---|---|---|---|
| | | Local | State | Federal | | Local | State | Federal |
| 1961 | $ 2,203 | 65.3% | 15.0% | 19.7% | $ 254,073 | 46.0% | 35.1% | 18.9% |
| 1962 | 2,480 | 64.8 | 14.7 | 20.5 | 283,948 | 45.2 | 36.7 | 18.1 |
| 1963 | 2,767 | 62.4 | 16.7 | 20.9 | 308,900 | 45.8 | 36.5 | 17.7 |
| 1964 | 3,601 | 73.8 | 11.5 | 14.7 | 333,024 | 45.9 | 37.5 | 16.6 |
| 1965 | 4,862 | 58.7 | 11.5 | 29.8 | 604,673 | 43.1 | 30.9 | 26.0 |
| Total | $15,913 | 64.6% | 13.4% | 22.0% | $1,784,618 | 44.9% | 34.6% | 20.5% |

Source: Annual reports of the U.S. Office of Education.

1/ State Board for Community Colleges and Occupational Education, op. cit., p. 27.

# V COLORADO POPULATION AND COMMUNITY COLLEGE ENROLLMENT PROJECTIONS

Implicit in any long range master plan is the projection of general population and student enrollments, extrapolated from current population figures. Demographic data are also an important element in the determination of educational programs and the location of college facilities.

MERI has developed a set of population and enrollment projections after a careful review of existing data from authoritative sources, population and high school graduation projections of state and federal agencies, and discussions with knowledgeable persons in the state. Nevertheless, in making the projections, certain assumptions had to be made because of the many variables that enter into the phenomenon of population growth. Thus, the population and enrollment projections appearing in this report are contingent upon the assumptions listed below.

## Assumptions for Statewide Master Plan

In this study, two groups of assumptions were made: one relating to the state, the other to community college day enrollments.

### Assumptions Relative to the State

1. Economic and industrial activity in Colorado will not make a sudden or drastic change between now and 1980. Historical industrial trends will remain in force; thus industrial and commercial growth will maintain a steady and upward trend.
2. The population growth of the state will continue at approximately the current level, and no catastrophe will drastically curtail that growth or reduce the total number of persons residing in Colorado.

3. The general pattern of migration in most of the 63 counties in the state will follow the historical trends established over the period between 1950 and 1967.

4. Birth rates will decline only moderately from the current level (i.e., between 16.5 and 17.5 per 1,000 population).

5. Migration into the state will continue at levels approximately the same as those since 1965.

Assumptions Relative to Community College Day Enrollments

1. Admission policies of community colleges will remain open. No major changes will occur in the policies governing the admission, retention, or disqualification of community college students.

2. No significant changes will occur in the selective service requirements that will drastically curtail or increase the present military obligation of young men of college age.

3. Tuition at community colleges will remain constant in relation to the economy. Tuition will only be raised or lowered commensurate with the economy so as not to distort enrollments grossly.

4. The long term historical trend toward more individuals' obtaining post-high school education will continue in Colorado, following national trends.

5. Community college enrollment trends in the coming years will generally parallel or exceed the population trends for the state.

## Colorado Population

The population of Colorado (see Table 17) was an estimated 2,015,700 on July 1, 1967,[1/] representing a 52.1 percent increase since the 1950 Census and a 14.9 percent growth since the 1960 Census.

Between 1950 and 1960, the state's annual growth rate (except for 1963) has exceeded that of the nation. Between those years it was a substantial average increase of 3.2 percent per year, compared with the national average of 1.9 percent. This growth has been the result of both natural increase (births over deaths) and net in-migration. The natural increase accounted for 58.1 percent of the growth between 1950 and 1960 and 53.7 percent since 1960. In 1965 and 1966 the components of growth were reversed, with net in-migration accounting for 62 percent of the population growth, partly because of the state's declining birth rate.

As shown in Table 18, Colorado's birth rate has closely paralleled that of the nation, slightly exceeding it in 1950 and 1960 and in each year since, except in the last three years, when it fell below the national average.

## Distribution of Population

The chief characteristics of Colorado's population are its uneven distribution and, following national trends, the increasing concentration of population in urban centers. Approximately 80 percent of the state's population resides in ten counties; with the exception of Mesa County all of them are east of the Continental Divide. Further evidence of the uneven population distribution lies in the fact that 26 of the state's 63 counties have 5,000 or fewer residents. Estimates of county population in 1967 are shown in Figure 8 along with a map of Colorado indicating the ten most populous counties.

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1/ Colorado State Budget Office.

Table 17

POPULATION TRENDS AND PROJECTIONS
STATE OF COLORADO
1950-1990
(Thousands)

| Year | State of Colorado | Denver SMSA[1/] | Colorado Springs SMSA[1/] | Pueblo SMSA[1/] | Total Three SMSAs |
|---|---|---|---|---|---|
| 1950 | 1,325.1 | 612.0 | 74.5 | 90.2 | 776.7 |
| 1960 | 1,754.0 | 949.4 | 143.7 | 118.7 | 1,211.8 |
| 1967 | 2,015.7 | 1,098.0 | 202.0 | 123.0 | 1,423.0 |
| 1970 | 2,131.0 | 1,165.0 | 235.0 | 125.0 | 1,525.0 |
| 1980 | 2,625.0 | 1,449.0 | 320.0 | 175.0 | 1,944.0 |
| 1990 | 3,183.0 | 1,756.0 | 394.0 | 234.0 | 2,384.0 |
| Percent Increase | | | | | |
| 1950-67 | 52.1 | 79.4 | 171.0 | 36.4 | 83.2 |
| 1967-80 | 30.2 | 32.8 | 58.4 | 42.3 | 36.6 |
| 1967-90 | 57.9 | 59.9 | 95.0 | 90.2 | 67.5 |

1/ Denver SMSA encompasses Adams, Arapahoe, Boulder, Denver, Jefferson counties; Colorado Springs SMSA is El Paso County; and Pueblo SMSA, Pueblo County.

Sources: MERI, from (1) Population Estimates, 1970 to 1985 (revised), U.S. Department of Commerce, Bureau of the Census, March 1967; (2) "Population Projections for Colorado Counties, 1960-2020," Colorado State Budget Office, February 1967.

Table 18

BIRTHS PER THOUSAND POPULATION
UNITED STATES AND COLORADO

| Year | United States | Colorado |
|---|---|---|
| 1940 | 19.4 | 19.1 |
| 1950 | 24.1 | 25.5 |
| 1960 | 23.6 | 24.5 |
| 1961 | 23.3 | 24.8 |
| 1962 | 22.4 | 23.2 |
| 1963 | 21.7 | 21.9 |
| 1964 | 21.2 | 20.8 |
| 1965 | 19.4 | 18.7 |
| 1966 | 19.2 | 17.5 |

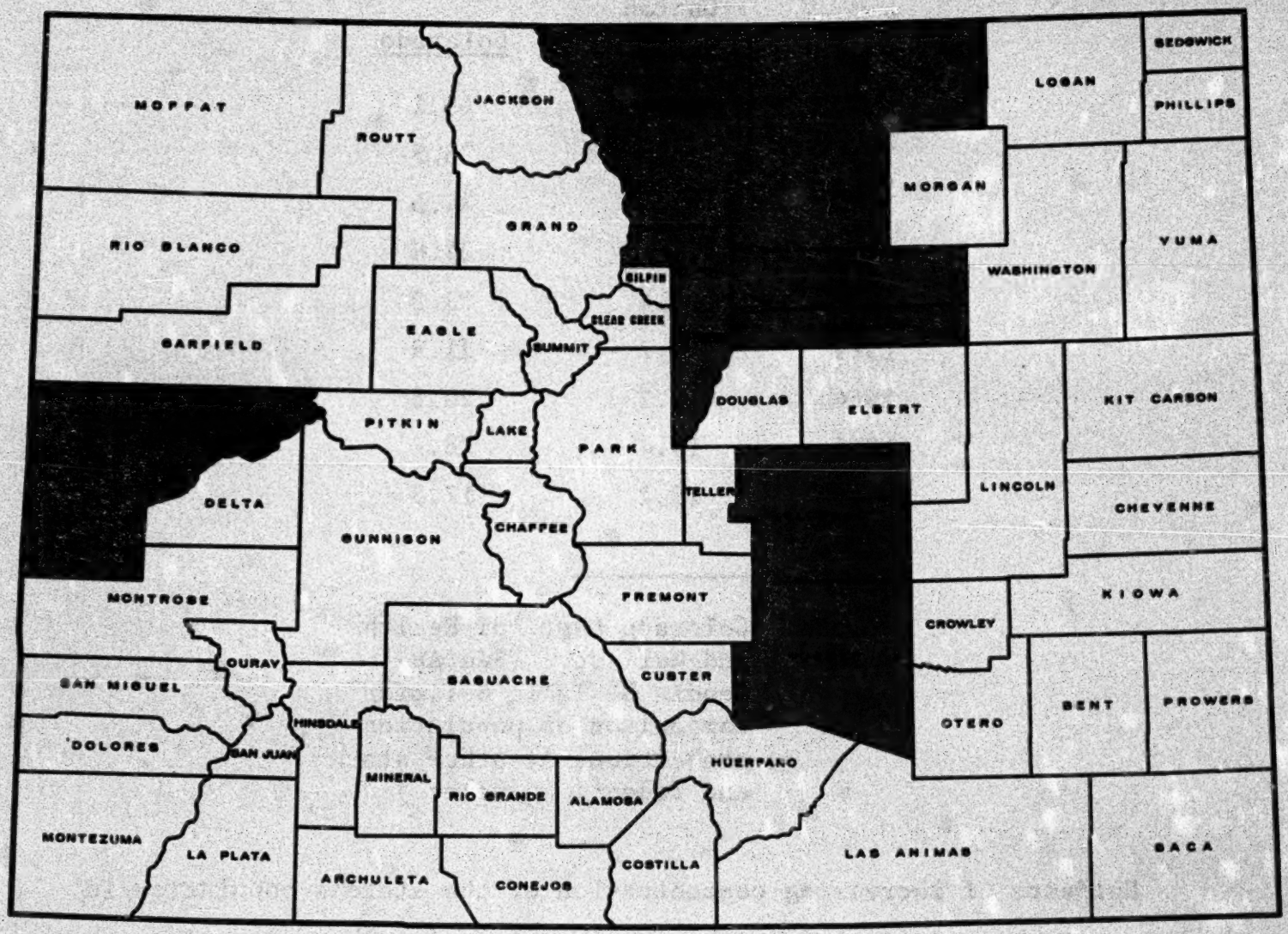
Source: Colorado Dept. of Health and Welfare. (See Appendix B, Table B-1, for comparison of population projections by other state and federal agencies.)

Evidence of increasing concentration of the state's population in urban centers is reflected in the growth rates of each county since 1950. Population concentration has occurred in a corridor of counties running from the Pueblo SMSA northward through the Colorado Springs and Denver SMSAs into Larimer and Weld counties.

Thirty-five counties, most of which are located in agricultural regions in the eastern and southern sections of the state, have lost population since 1950 (see Figure 9). Most of these counties have little industrial development to attract population and little prospect of rapid industrial development to reverse the historical trend of out-migration.

## Figure 8

## POPULATION BY COUNTY
## STATE OF COLORADO
## JULY 1, 1967




TEN MOST POPULOUS COUNTIES

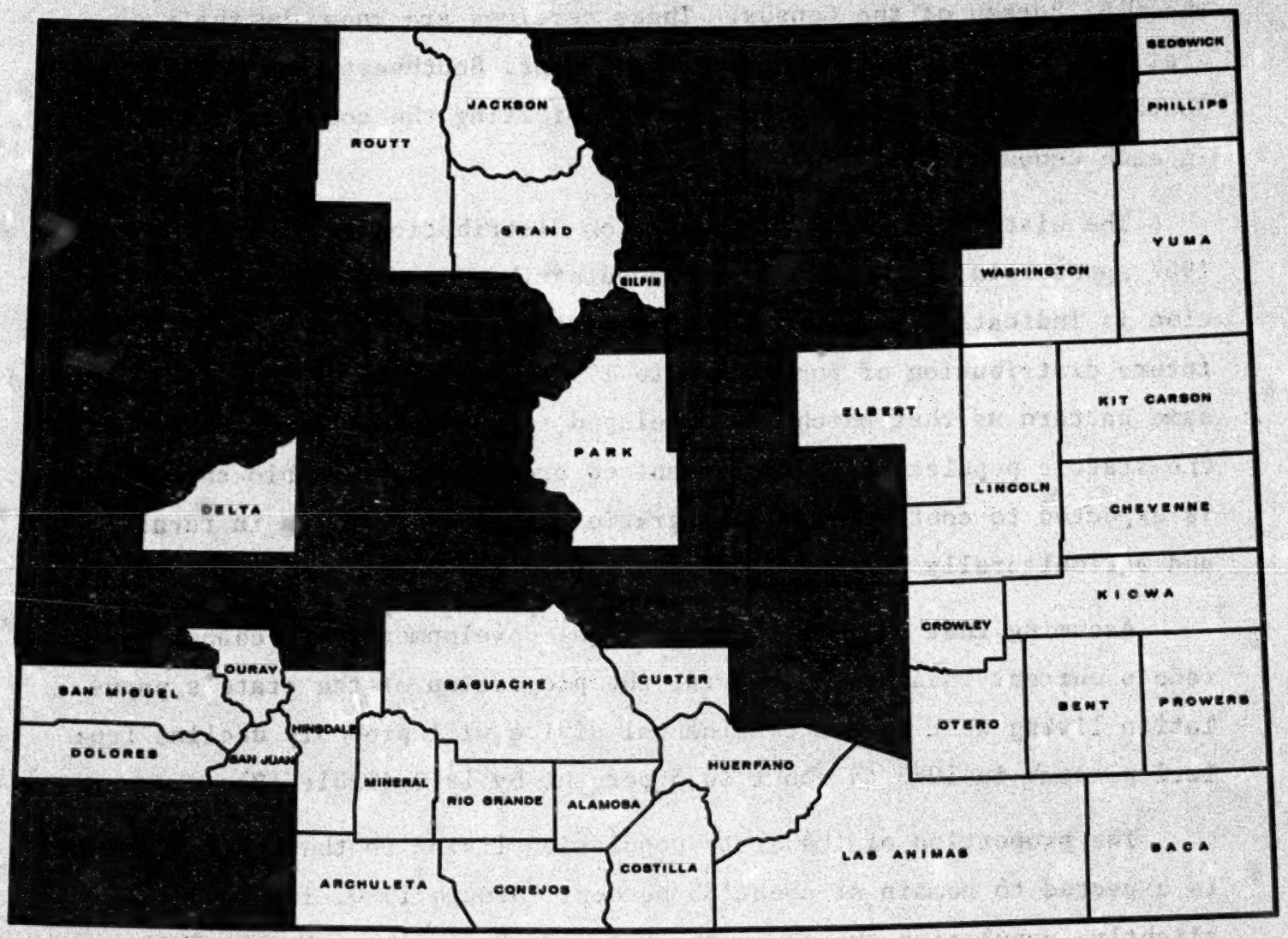
### COUNTIES BY RANK ORDER OF POPULATION - ESTIMATED, JULY 1, 1967
(In Thousands)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| DENVER | 477.0 | LAS ANIMAS | 16.8 | GUNNISON | 6.4 | TELLER | 3.0 |
| JEFFERSON | 209.0 | DELTA | 15.3 | BACA | 6.3 | ARCHULETA | 2.7 |
| EL PASO | 202.0 | GARFIELD | 14.0 | ROUTT | 6.3 | CHEYENNE | 2.7 |
| ADAMS | 163.0 | MONTEZUMA | 13.6 | WASHINGTON | 5.9 | KIOWA | 2.2 |
| ARAPAHOE | 139.0 | PROWERS | 13.2 | EAGLE | 5.4 | SAN MIGUEL | 2.1 |
| PUEBLO | 122.9 | RIO GRANDE | 11.5 | RIO BLANCO | 5.0 | SUMMIT | 1.9 |
| BOULDER | 110.0 | ALAMOSA | 10.0 | LINCOLN | 4.9 | DOLORES | 1.7 |
| WELD | 81.0 | CHAFFEE | 9.8 | SAGUACHE | 4.3 | OURAY | 1.7 |
| LARIMER | 70.0 | LAKE | 9.0 | PHILLIPS | 4.2 | JACKSON | 1.6 |
| MESA | 53.0 | YUMA | 8.6 | ELBERT | 3.9 | PARK | 1.6 |
| OTERO | 24.8 | CONEJOS | 8.3 | SEDGWICK | 3.8 | CUSTER | 1.2 |
| FREMONT | 21.6 | HUERFANO | 8.0 | COSTILLA | 3.7 | SAN JUAN | .9 |
| MONTROSE | 20.5 | KIT CARSON | 7.3 | GRANDE | 3.7 | GILPIN | .8 |
| LOGAN | 20.0 | MOFFAT | 6.9 | CLEAR CREEK | 3.6 | MINERAL | .5 |
| MORGAN | 19.4 | BENT | 6.8 | CROWLEY | 3.4 | HINSDALE | .1 |
| LA PLATA | 18.2 | DOUGLAS | 6.5 | PITKIN | 3.2 | | |
| | | | | | | STATE TOTAL | 2,015.7 |

SOURCE: State Budget Office, Division of Accounts and Controls.

## Figure 9

# POPULATION CHANGE BY COUNTY
# STATE OF COLORADO
# 1950-1967




POPULATION INCREASE, 1950-1967

POPULATION DECREASE, 1950-1967

PERCENT POPULATION CHANGE, 1950-1967

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| DENVER | 14.7 | LAS ANIMAS | -35.1 | GUNNISON | 12.0 | TELLER | 8.9 |
| JEFFERSON | 275.3 | DELTA | -11.9 | BACA | -20.9 | ARCHULETA | -10.9 |
| EL PASO | 171.1 | GARFIELD | 20.4 | ROUTT | -29.5 | CHEYENNE | -21.8 |
| ADAMS | 305.1 | MONTEZUMA | 36.1 | WASHINGTON | -21.6 | KIOWA | -26.7 |
| ARAPAHOE | 166.7 | PROWERS | -11.1 | EAGLE | 20.3 | SAN MIGUEL | -32.1 |
| PUEBLO | 36.3 | RIO GRANDE | -10.4 | RIO BLANCO | 6.0 | SUMMIT | 67.7 |
| BOULDER | 127.8 | ALAMOSA | -5.1 | LINCOLN | -17.1 | DOLORES | -13.5 |
| WELD | 20.0 | CHAFFEE | 36.7 | SAGUACHE | -24.1 | OURAY | -19.2 |
| LARIMER | 60.7 | LAKE | 46.3 | PHILLIPS | -14.7 | JACKSON | -18.9 |
| MESA | 36.0 | YUMA | -20.6 | ELBERT | -12.9 | PARK | -14.4 |
| OTERO | -1.9 | CONEJOS | -18.4 | SEDGWICK | -25.4 | CUSTER | -23.7 |
| FREMONT | 17.6 | HUERFANO | -24.2 | COSTILLA | -39.1 | SAN JUAN | -36.4 |
| MONTROSE | 34.0 | KIT CARSON | -15.1 | GRANDE | -6.7 | GILPIN | -5.9 |
| LOGAN | 16.4 | MOFFAT | 16.0 | CLEAR CREEK | 9.5 | MINERAL | -21.3 |
| MORGAN | 7.3 | BENT | -22.5 | CROWLEY | -34.9 | HINSDALE | -43.0 |
| LA PLATA | 21.6 | DOUGLAS | 85.3 | PITKIN | 94.4 | | |
| | | | | | | STATE TOTAL | 52.1% |

SOURCE: State Budget Office, Division of Accounts and Controls.

## Projected Population Growth and Distribution

In the analysis of population growth and distribution, the state of Colorado was divided into four county census sections devised by the U.S. Bureau of the Census. These sections are known by their general geographic location, namely, Northwest, Southwest, Northeast, and Southeast. See Appendix C for a map indicating the counties included in each census section.

The historical trend in population distribution between 1950 and 1967 appears in Table 19. Projected distribution of the state population is indicated by county census section and by SMSA. It appears that future distribution of population to 1990 will follow essentially the same pattern as that which has developed since 1950. Concentration of the state's population in the urbanized areas between Pueblo and Denver is expected to continue, as is migration of the population in rural and agriculturally oriented counties toward urban centers.

Assuming that no major technological development will change Colorado's current industrial pattern, the proportion of the state's population living west of the continental divide will probably decline from 12.2 percent in 1967 to about 10.5 percent by 1990 (Table 19).

The proportion of the state population living in the Denver SMSA is expected to remain at about 55 percent through 1990, increasing only slightly; population growth in the Colorado Springs and Pueblo SMSAs is expected to increase enough so that by 1990 each of these SMSAs will contain a slightly higher proportion of the state population than in 1967. Currently, nearly 70 percent of the state's total population lives in the three SMSAs combined; by 1990 nearly three-quarters of the Colorado population is expected to do so.

## Community College Day Enrollments

### Projections

On the basis of the historical and projected growth of state population, MERI developed community college day enrollment projections for the state to 1980. Two methods were used: (1) enrollment projections

Table

ACTUAL AND PROJECTED POPU
COLORADO BY COUNTY CEN
1950-1
(Thousa

| County Census Section | 1950 Distri-bution | 1950 % of State Popu-lation | 1960 Distri-bution | 1960 % of State Popu-lation | Distri-butio |
|---|---|---|---|---|---|
| Northwest | 85.9 | 6.5% | 96.4 | 5.5% | 102 |
| Southwest | 135.6 | 10.2 | 139.5 | 8.0 | 143 |
| WESTERN POPULATION | 221.5 | 16.7% | 235.9 | 13.5% | 245 |
| Northeast | 805.3 | 60.8% | 1,138.1 | 64.9% | 1,330 |
| Denver SMSA | 612.1 | 46.2 | 949.4 | 54.1 | 1,098 |
| Southeast | 298.3 | 22.5 | 380.0 | 21.7 | 439 |
| Colorado Springs SMSA | 74.5 | 5.6 | 143.7 | 8.2 | 202 |
| Pueblo SMSA | 90.2 | 6.8 | 118.7 | 6.8 | 123 |
| EASTERN POPULATION | 1,103.6 | 83.3% | 1,518.1 | 86.5% | 1,770 |
| Total State Population | 1,325.1 | | 1,754.0 | | 2,015 |
| Total Population in SMSAs | 776.8 | | 1,211.8 | | 1,423 |
| Percent of State Population | | 58.6% | | 69.0% | |

Source: MERI, from information obtained from State Budget Office, D

ON DISTRIBUTION IN
SECTION AND SMSA

| 7 | 1970 | | 1980 | | 1990 | |
|---|---|---|---|---|---|---|
| % of State Population | Distribution | % of State Population | Distribution | % of State Population | Distribution | % of State Population |
| 5.1% | 106.6 | 5.0% | 118.1 | 4.5% | 136.9 | 4.3% |
| 7.1 | 149.2 | 7.0 | 170.6 | 6.5 | 197.3 | 6.2 |
| 12.2% | 255.8 | 12.0% | 288.7 | 11.0% | 334.2 | 10.5% |
| 66.0% | 1,429.5 | 67.0% | 1,800.0 | 68.6% | 2,195.0 | 69.0% |
| 54.5 | 1,165.0 | 54.6 | 1,449.0 | 55.2 | 1,756.0 | 55.2 |
| 21.8 | 445.8 | 21.0 | 536.3 | 20.4 | 653.8 | 20.5 |
| 10.0 | 235.0 | 11.0 | 320.0 | 12.2 | 394.0 | 12.4 |
| 6.1 | 125.0 | 5.9 | 175.0 | 6.6 | 234.0 | 7.3 |
| 87.8% | 1,875.3 | 88.0% | 2,336.3 | 89.0% | 2,848.8 | 89.5% |
| | 2,131.0 | | 2,625.0 | | 3,183.0 | |
| | 1,525.0 | | 1,944.0 | | 2,384.0 | |
| 70.6% | | 71.5% | | 74.0% | | 74.9% |

ion of Accounts and Controls.

based on participation of state residents in community college day programs (Method A), and (2) a projection of enrollments using progression rates of anticipated high school graduates from public and private institutions in the state (Method B). A detailed description of the methodology used in each of these projection techniques is given in Appendix D.

The enrollment trend resulting from Method A (participation of state population) was substantially higher than that established by Method B (progression rate of high school graduates). The difference between the upper and lower enrollment projections provided the limits within which MERI developed a Master Planning Guideline for anticipated community college enrollments in Colorado.

The results of enrollment projections using Methods A and B appear on Table 20, along with the enrollment trend that MERI recommends for master planning. This trend was established after a rigorous analysis of the historical enrollment patterns in each of the existing community colleges in the state, taking into consideration the actual and projected population growth in each geographic region of the state.

According to the enrollment trend determined by MERI (Figure 10), state community college enrollments should about double between the fall of 1968 and 1975. This is primarily the result of the opening of new community colleges in the metropolitan areas in Denver and Colorado Springs, where the highest concentration of state population is located. By 1980, day enrollments in community colleges throughout the state should exceed 26,000.

Distribution

After the trend of day enrollments was established for the state as a whole, MERI analyzed the community college enrollment patterns in each of the proposed community college administrative areas in order to determine the tentative day enrollments in each of these areas in the years 1970, 1975, and 1980. (A detailed description of the process appears in Appendix E.) A major assumption used in the analysis was that after 1970 the number of potential community college students residing in each proposed community college administrative area would be an

Table 20

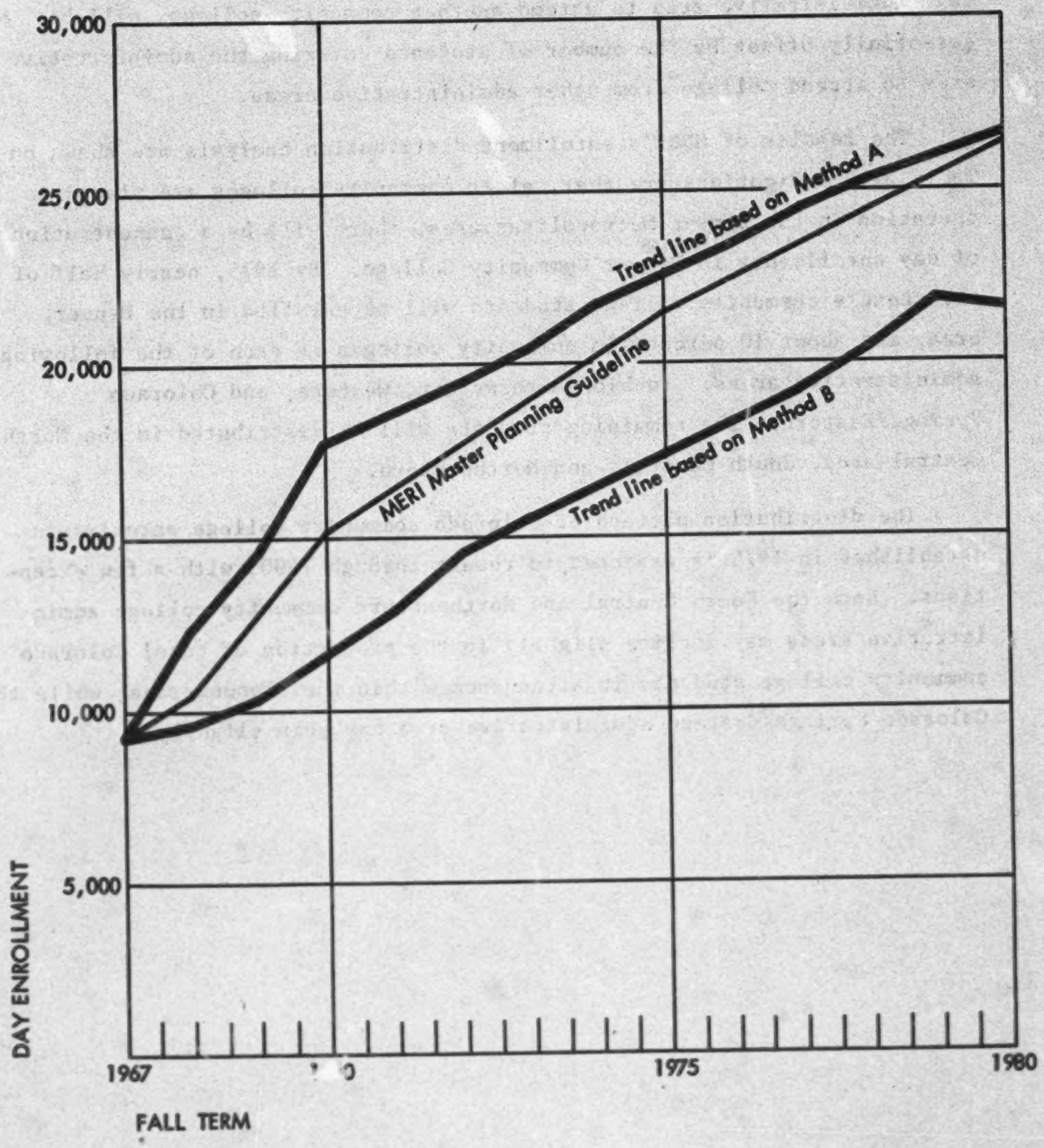
COMPARISON OF DAY ENROLLMENT PROJECTIONS
FOR COLORADO COMMUNITY COLLEGES
AND MERI MASTER PLANNING GUIDELINE

| Year | MERI Projection | | MERI Master Planning Guideline |
|---|---|---|---|
| | Method A | Method B | |
| 1968 | 12,330 | 9,418 | 10,465 |
| 1969 | 14,651 | 10,164 | 12,850 |
| 1970 | 17,835 | 11,589 | 15,025 |
| 1971 | 18,648 | 12,974 | -- |
| 1972 | 19,436 | 14,508 | -- |
| 1973 | 20,328 | 15,490 | -- |
| 1974 | 21,800 | 16,344 | -- |
| 1975 | 22,565 | 17,292 | 21,605 |
| 1976 | 23,405 | 18,138 | -- |
| 1977 | 24,245 | 19,057 | -- |
| 1978 | 25,085 | 20,345 | -- |
| 1979 | 25,925 | 20,876 | -- |
| 1980 | 26,765 | 20,451 | 26,465 |

Sources: Enrollment projections were developed by MERI; results of Method A are based on participation of state population in day programs in Colorado community colleges; results of Method B are based on the progression rate of high school graduates into community colleges from public and private schools in Colorado; and MERI Master Planning Guideline was derived from analysis of community college enrollment trends throughout the state.

Figure 10

MERI COMMUNITY COLLEGE DAY ENROLLMENT
MASTER PLANNING GUIDELINE
1967-1980




Source: Enrollment data on Table 20.

approximate index of the number of students who will attend community colleges located within that area. This assumption was based on the fact that after 1970 each proposed community college administrative area will have one or more community college campuses and centers in operation. It was further assumed that the number of students leaving one community college administrative area to attend another community college, will be essentially offset by the number of students entering the administrative area to attend college from other administrative areas.

The results of MERI's enrollment distribution analysis are shown on Table 21. Indications are that, after community colleges are placed in operation in the Denver Metropolitan area, there will be a concentration of day enrollments in Denver Community College. By 1975, nearly half of the state's community college students will be enrolled in the Denver area, and about 10 percent in community colleges in each of the following administrative areas: Pueblo/Southeastern, Western, and Colorado Springs/Eastern. The remaining students will be distributed in the North Central area, South Central, and Northeastern.

The distribution pattern of Colorado community college enrollments established in 1975 is expected to remain through 1980, with a few exceptions. Both the South Central and Northeastern community college administrative areas may decline slightly in the proportion of total Colorado community college students in attendance within their boundaries, while the Colorado Springs/Eastern administrative area may gain slightly.

Table 21

DISTRIBUTION OF PROJECTED COLORADO DAY ENROLLMENTS BY PROPOSED COMMUNITY COLLEGE ADMINISTRATIVE AREAS

| Proposed Community College Administrative Area | MERI Master Planning Guideline for Fall Term Day Enrollments | | | | |
|---|---|---|---|---|---|
| | 1968 | 1969 | 1970 | 1975 | 1980 |
| 1 Denver Metropolitan | 3,550 | 5,175 | 6,200 | 11,000 | 13,125 |
| 2 Pueblo/Southeastern | 1,760 | 1,925 | 2,035 | 2,200 | 2,310 |
| 3 South Central | 925 | 1,000 | 1,200 | 1,200 | 1,150 |
| 4 Western | 1,815 | 1,980 | 2,090 | 2,350 | 2,800 |
| 5 North Central | 1,200 | 1,350 | 1,575 | 1,785 | 1,955 |
| 6 Northeastern | 715 | 770 | 825 | 970 | 925 |
| 7 Colorado Springs/Eastern | 500 | 650 | 1,100 | 2,100 | 4,200 |
| Total Colorado | 10,465 | 12,850 | 15,025 | 21,605 | 26,465 |

Source: MERI.

# VI DENVER POPULATION AND COMMUNITY COLLEGE PLANNING

## Population Projections

Because of the immediate planning problems created by the requirement to establish the first operating unit of Denver Community College in the fall term of 1968, MERI analyzed available demographic data in order to: (1) develop a logical priority in general site locations for each of the proposed community colleges, (2) establish potential trends in student enrollment, and (3) aid in the determination of appropriate occupational education curriculum for Denver Community College.

During the decade between 1950 and 1960, the population of the Denver SMSA grew from over 600,000 people to about 950,000, a growth rate of over 50 percent. In 1967 the population grew to approximately 1,098,000 persons or a 15.7 percent increase over 1960 (Table 22).

While the past growth rate of the Denver SMSA has been rapid and well documented, population projections to 1990 by various public agencies indicate that much uncertainty exists regarding the future growth rates of the five-county area. A comparison of various population projections for the Denver SMSA appears in Appendix F, Table F-1.

The population projection for the Denver SMSA developed by the state budget office was used as a planning guideline by MERI because it appeared most reasonable in the light of the MERI analysis and provided county data. Table 21 contains the projected population trend for each of the five counties in the Denver SMSA to 1990.

The largest concentration of population is in Denver County and is expected to remain so through 1990. In 1966, the population density of Denver was 7,197 persons per square mile compared with 261 persons per square mile in Jefferson County, which had the second highest population density in the Denver SMSA. The lowest density was found in Adams County with 127 persons per square mile.

Table 22

POPULATION PROJECTIONS FOR DENVER SMSA
BY COUNTY

| | 1960 | 1967 | 1970 | 1975 | 1980 | 1990 |
|---|---|---|---|---|---|---|
| Denver Metropolitan Area | 949,383 | 1,098,000 | 1,165,000 | 1,297,000 | 1,449,000 | 1,756,000 |
| Adams County | 120,296 | 163,000 | 180,000 | 193,000 | 210,000 | 251,000 |
| Arapahoe County | 133,426 | 139,000 | 155,000 | 170,000 | 189,000 | 241,000 |
| Boulder County | 74,254 | 110,000 | 125,000 | 150,000 | 178,000 | 235,000 |
| Denver County | 493,887 | 477,000 | 470,000 | 490,000 | 515,000 | 554,000 |
| Jefferson County | 127,520 | 209,000 | 235,000 | 294,000 | 357,000 | 475,000 |
| Percent of Colorado Population in Denver SMSA | 54.1% | 54.5% | 54.7% | 54.9% | 55.2% | 55.2% |
| Total State Population | 1,754,000 | 2,015,700 | 2,131,000 | 2,361,000 | 2,625,000 | 3,183,000 |

Source: MERI, from reports prepared by Colorado State Budget Office.

## Pattern of Population Growth

The direction of population growth in the Denver SMSA has been nearly concentric around the hub of central Denver, which contains about 45 percent of the total population in the metropolitan area. Table 23 contains the estimated population and growth rate between 1960 and 1966 of thirteen selected cities and urban centers outside Denver County. These cities include the largest city in each county as well as other cities of varying sizes.

Industrial development along the Platte River in the northeastern portion of Denver County has caused residential growth to leapfrog into more distant suburban areas to the north and northwest of Denver. Commerce City recorded the highest growth rate since 1960, with an increase in population of 107.3 percent; Arvada was second with an increase of 82.6 percent; Westminster grew by 35 percent. In total, the suburbs and urban centers in the north and northwest had the strongest pull of residential development, although Aurora, east of Denver, with 68,000 residents gained 40 percent in population since 1960; and Littleton, directly south of Denver, grew by nearly 54 percent. In Boulder County, the cities of Boulder, Broomfield, and Longmont each recorded an increase in population of approximately 50 percent between 1960 and 1966.

## Major Characteristics of Population

Because the direction and development of educational programs offered by potential Denver community colleges depend largely on the needs of the residents they serve, MERI has examined the major characteristics of the Denver SMSA population described in the 1960 Census. It also used information and reports provided by local and state agencies and other informed and authoritative persons to update census information. Interviews with Denver Public School authorities, city and county planning agencies, employers, and professional associations were conducted to determine the nature and extent of the change since 1960 in such major population characteristics as level of educational attainment, income, age, ethnic population and distribution. While some changes have occurred

Table 23

POPULATION ESTIMATES OF SELECTED CITIES AND URBAN CENTERS IN THE DENVER SMSA 1960-1966

| County | City | General Direction from Central Denver | Estimated Population January 1966 | Percent of Total SMSA Population | Percent Growth Since 1960 |
|---|---|---|---|---|---|
| Adams Arapahoe | Aurora | East | 68,000 | 6.3 | 40.0 |
| Arapahoe | Englewood | South | 37,400 | 3.5 | 11.9 |
| Arapahoe | Cherry Hills | South | 3,200 | 0.3 | 67.3 |
| Arapahoe | Littleton | South | 21,000 | 1.9 | 53.6 |
| Jefferson | Edgewater | West | 5,400 | 0.5 | 25.4 |
| Jefferson | Golden | West | 8,656 | 0.8 | 21.1 |
| Jefferson | Arvada | Northwest | 37,000 | 3.4 | 82.6 |
| Adams | Westminster | North | 18,700 | 1.7 | 35.0 |
| Adams | Commerce City | North | 18,600 | 1.7 | 107.3 |
| Adams | Thornton | North | 14,500 | 1.3 | 27.7 |
| Boulder Jefferson | Broomfield | Northwest | 6,600 | 0.6 | 46.3 |
| Boulder | Boulder | Northwest | 56,000 | 5.2 | 48.5 |
| Boulder | Longmont | Northwest | 17,500 | 1.6 | 52.2 |
| Subtotal of Selected Urban Areas Outside Denver | | | 312,556 | 28.9 | 50.9 |
| Other Rural and Urban Areas Outside the Selected Fourteen Urban Centers | | | 280,444 | 25.9 | 13.0 |
| Denver--City and County | | | 490,000 | 45.2 | (0.8) |
| Total Denver SMSA | | | 1,083,000 | 100.0 | 15.9 |

Source: MERI, from "Population of Colorado Cities and Towns, 1960-1967," State Budget Office, April 1967.

in the shift of population patterns, generally, the trend established during the 1950s was found to be a continuing one.

Education

In 1960, the median educational level of the population age 25 and older was 12.2 years. This was the second highest level recorded among the nation's largest 26 SMSAs. Less than 1 percent of the total SMSA population had received no formal schooling; 24.1 percent completed 8 years of education, but no high school; and nearly 50 percent had completed high school but received no post-high school education. Over 27 percent of the population had received four years of college, reflecting the high level of educational attainment of the metropolitan residents.

While the educational level for most of the Denver SMSA population continues to be high, educational attainment is not shared by all. The median school years completed for persons with Spanish surnames was 8.6 in 1960; for Negroes over the age of 25, the range was from a low of 8.0 years to a high of 12.2 years in those sections of Denver with the highest concentration of Negroes.

According to data compiled by Mountain States Telephone Company for its report, A Profile of Denver, Denver County has the second highest dropout rate in Colorado, exceeded only by counties constituting the San Luis Valley area in the southern portion of the state. In the 1965-66 school year over 4,700 students left school between the 7th and 12th grades. This represents an annual dropout rate of 4.8 percent of the total enrollment in the grades 7 through 12 in the Denver SMSA. The annual dropout rate was 5.8 percent for boys, and 3.8 percent for girls. The highest dropout rate occurred in the last three years of high school. For boys, the rate reached a high of 17.8 percent in the 11th grade, and for girls the highest level of dropout was reached in the same grade at 12.5 percent. No verifiable statistics are available as of the date of writing of this report, but generally the educational attainment of those persons living in areas of Denver with the highest density of Negroes and Spanish

surnames is lower than that of those persons living outside such areas. Thus it seems reasonable to assume that dropout rates are probably highest in schools serving the highest percentage of Negro and Spanish surname students.

Income

Median family income for all families in the Denver SMSA was $6,551 per year in 1960. In Denver city and county, the median family income was slightly lower, at $6,361. In those sections of Denver having the highest concentration of Negro families, the annual income ranged from $3,357 to $5,735; in those sections with the highest concentration of people with Spanish surnames, income ranged from $2,802 to $6,043.

When all families living in the Denver SMSA in 1960 are considered together, regardless of ethnic classification, about 68 percent had incomes between $3,000 and $10,000 per year; 15 percent had lower; and about 19 percent had higher incomes. Families with the lowest annual income tend to live in or near the Central Business District (CBD). The highest income group receiving $8,000 or more per year tend to reside in east, southeast, and to some extent in southwest Denver. Thus, the generalization can be made that the higher the average family income, the more likely that family is to live in suburbs located away from the CBD.

Age Composition

In 1960 the median age of Denver SMSA residents was 27.8 years, which was 1.7 years younger than the national average. In 1950, 9 percent of the population in Denver County was over 65 years of age. By 1960, this proportion had increased to about 11 percent. While the increase in the proportion of the older population reflected the nationwide trend toward longer life spans, the proportion of youths under the age of 14 in the Denver SMSA has shown a slight tendency to decline during the past seven years, from 32.2 percent of the total population in 1960 to 31.3 percent in 1967. Future projections do not seem to

indicate any significant reduction in the proportion of this age group through the early 1970s.

In 1960, about 27.7 percent of the Denver SMSA population was between the ages of 15 and 34. In 1967, it was estimated that the proportion in this age group dropped to 25.0 percent, and by 1970 will be 24.8 percent. It is important to realize, however, that while the proportion of 15 through 34 year olds may decline slightly by 1970, there has been and will continue to be a rise in the absolute number of persons in this age category. For example, in 1960 in the Denver SMSA there were about 257,885 persons in the age group from 15 to 34 years old; in 1967 there were 302,247; and it is estimated that in 1970 there will be 315,758. The growth rate of this age group between 1960 and 1967 was 17.2 percent, and between 1967 and 1970 it is expected to be 4.4 percent.

The age group between 15 and 34 is a particularly important one because it provides the majority of community college students. The age group between 18 and 21 is of particular significance because it is the period when most high school graduates enter their first year of college. Indications are that the youth of college entry age in the Denver SMSA are abundant and will continue to exceed the current post-high school educational opportunities available to them.

## Racial and Ethnic Population

Racial and ethnic minorities in the Denver SMSA are, in order of magnitude, persons of Spanish surname, Negroes, and persons of other races (predominately Oriental and American Indian). The Negro and Spanish surname population combined comprises about 11 percent of the total metropolitan population and about 15 percent of the population in Denver County. During the past several decades there has been a trend of migration among the middle and higher income white population away from Central Denver to the suburbs. As the white population has left, they have been replaced by Negroes and persons of Spanish surnames. Thus the proportion of Negroes and Spanish surname population has been increasing in Central Denver.

The 1950 Census placed the number of Negroes in Denver County at about 15,060 (1.7 percent of the population). In 1960 the number had about doubled to 30,250 or 6.1 percent of the population. Estimates of the Negro population in 1966 range from 38,000 to 42,000 or slightly more than 8 percent of the population. If the population trend among Negroes continues as expected by the Denver Planning Office, it is probable that between 1960 and 1980 the Denver County Negro population will reach 60,000 to 70,000 persons.

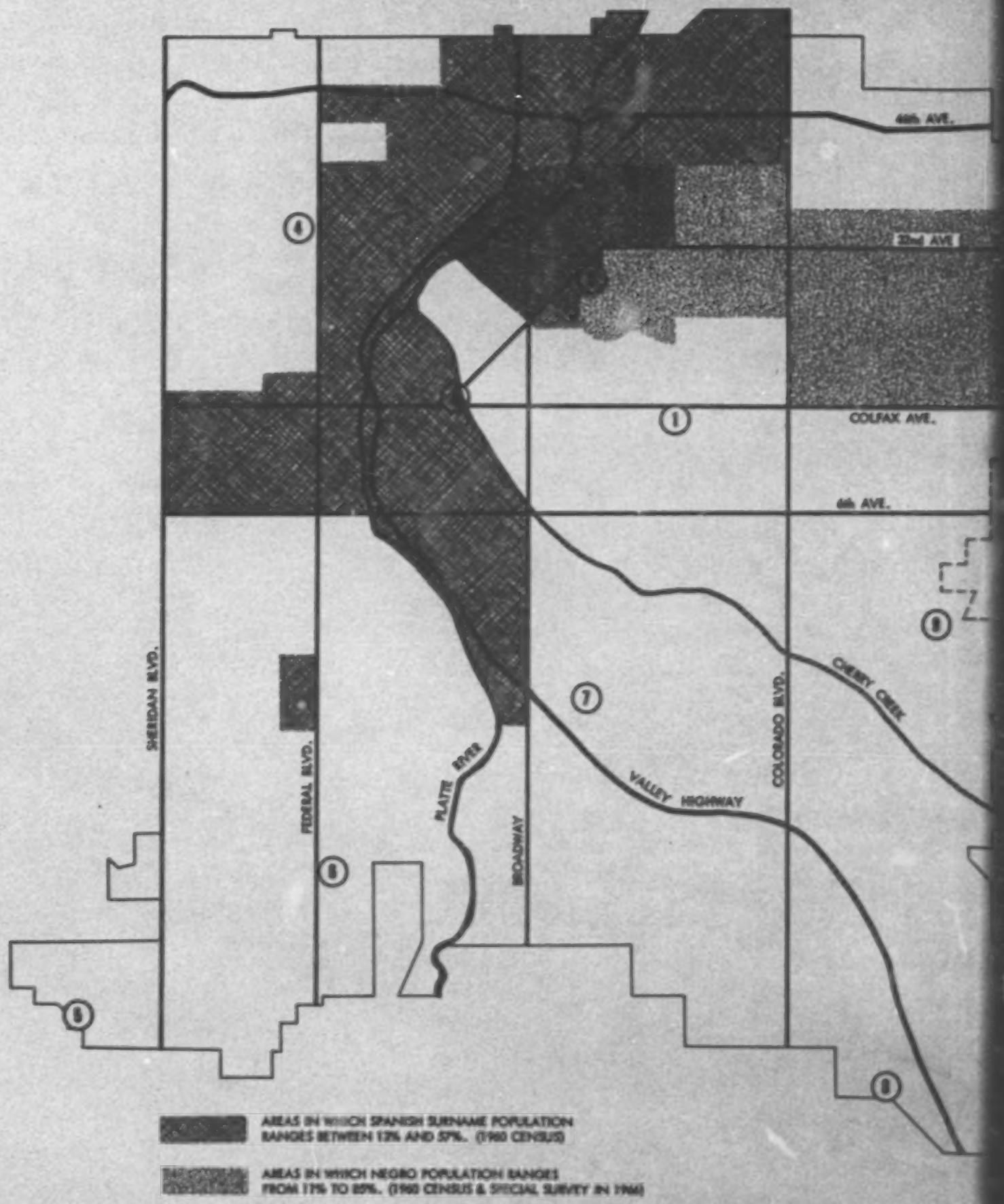
In 1950, about 43,150 persons with Spanish surnames constituted about 6 percent of the Denver Metropolitan population; by 1960 their number increased to about 60,000 persons or 6.5 percent of the population. Estimates of the Spanish surname population in 1966 range from 70,000 to 90,000 persons or about 8.6 percent of the total SMSA population.

The Oriental community was established in Denver as a result of relocation programs instituted during World War II. The Bureau of Indian Affairs has been relocating American Indians in a number of large urban areas, including Denver. The Oriental and Indian populations are relatively small, but the majority of both groups reside in areas to the northeast of the central city.

Changing Distribution Patterns of Minority Groups

The shift in minority group population within the city and county of Denver since the 1960 Census is difficult to measure accurately, but according to 1960 Census data the Negro population had concentrated most densely in the north central portion of Denver. The map shown in Figure 11 indicates the 14 census tracts where the concentration of Negro population ranged from 11.4 percent to 85.2 percent. Within the shaded area shown on the map (see legend on Figure 11), Negroes accounted for nearly one-half of the population.

There is evidence that since 1960 there has been a shift of the Negro population from the north central portion of Denver to the Park Hill area to the east of Central Denver. In 1950 only 54 Negroes resided in Park




Source: Data from U.S. Census Reports, 1960.

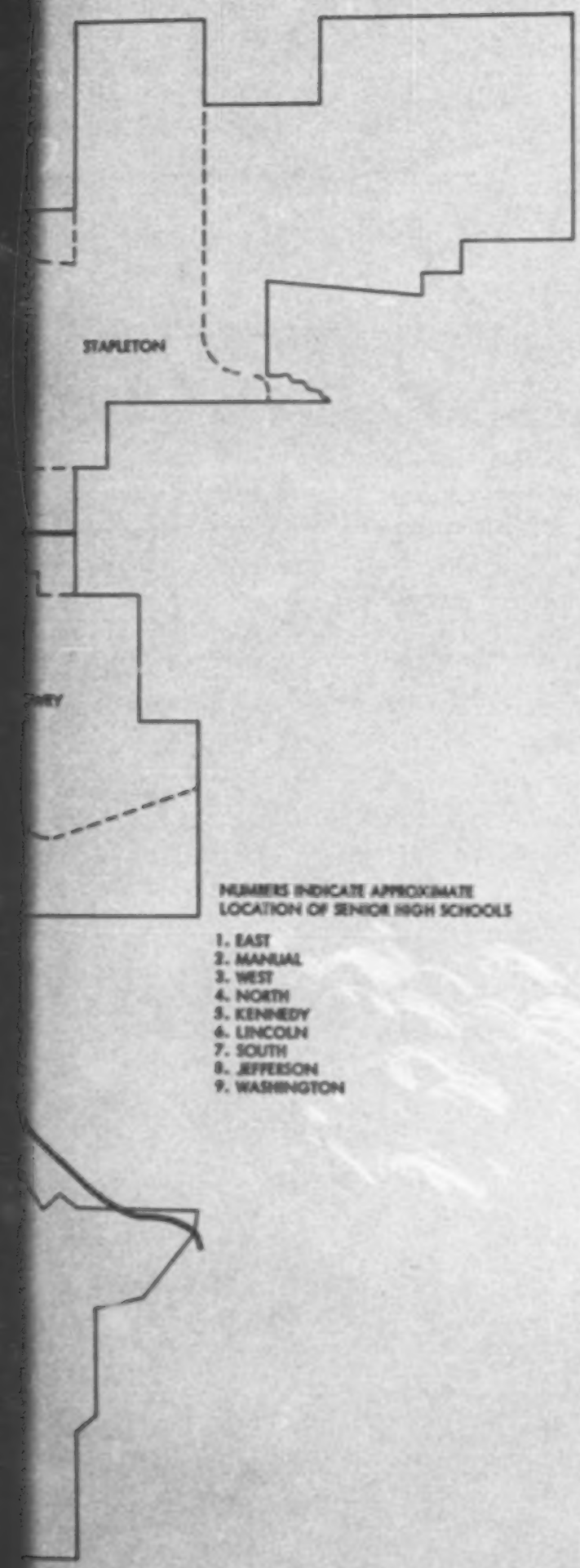



**Figure 11**

**AREAS OF HIGH DENSITY POPULATION DISTRIBUTION OF NEGRO AND SPANISH SURNAME RESIDENTS IN DENVER COUNTY**

Hill (0.3 percent of the population); in 1960, 566 or 1.6 percent of the population; and according to a special survey in 1966 there were over 12,000 Negroes living there, constituting about 28 percent of the population.[1/]

Persons with Spanish surnames appear to have settled most densely in areas northeast and southwest of the Denver Central Business District. The shaded area shown on the map represents 21 census tracts in which the Spanish surname population accounts for 13 to 57 percent of the total population. In aggregate, the Spanish surname population was nearly 30 percent of the population in this area.

When the areas of concentration of Negro and Spanish surname population are diagrammed, there is some overlap of the two groups in sections to the northeast of Central Denver.

Student enrollments in the nine senior high schools of Denver reflect the minority group population distribution throughout the county. The ethnic composition of each high school, according to an unofficial head count conducted during 1967, is presented on Table 24.

In all but one school, white students were in the majority, ranging from 56 percent to 99.4 percent of the total student body. Negro students were the majority in the one remaining high school (69.7 percent). While Spanish surname students were not the majority in any high school, they do constitute a substantial portion (20 percent or more) of the student enrollment in three schools, and between 5 and 12 percent in three others.

Aside from the one high school where Negro students were in the majority, they represented over one-third of the student body in one other high school, and 3 to 4 percent of the enrollment in two other high schools. In the remaining 5 high schools Negro enrollments were negligible, constituting less than 2 percent of the student enrollment.

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1/ George E. Bardwell, "Characteristics of Negro Residences in Park Hill area of Denver, Colorado, 1966."

Table 24

ETHNIC COMPOSITION OF SENIOR HIGH SCHOOLS
IN DENVER COUNTY[1]

| Identification Number[2] | High School | General Location in Denver | Total Enrollment (fall 1967) | White | | Negro | | Spanish American | | Oriental | | Indian and Other | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Number | Percent | Number | Percent | Number | Percent | Number | Percent | Number | Percent |
| 1 | East | East Central | 2,567 | 1,437 | 56.0 | 932 | 36.3 | 127 | 4.9 | 64 | 2.5 | 7 | 0.3 |
| 2 | Manual | North Central | 1,592 | 107 | 6.7 | 1,109 | 69.7 | 326 | 20.5 | 50 | 3.1 | -- | -- |
| 3 | West | Central | 2,016 | 1,182 | 58.6 | 80 | 4.0 | 733 | 36.4 | 5 | 0.2 | 16 | 0.8 |
| 4 | North | Northwest | 2,689 | 1,794 | 66.7 | 5 | 0.2 | 855 | 31.8 | 3 | 0.1 | 4 | 0.1 |
| 5 | Kennedy | Southwest | 2,404 | 2,389 | 99.4 | 2 | 0.1 | 12 | 0.4 | 1 | 0.1 | -- | -- |
| 6 | Lincoln | Southwest | 2,879 | 2,532 | 87.9 | 3 | 0.1 | 335 | 11.6 | 6 | 0.2 | 3 | 0.1 |
| 7 | South | South Central | 2,675 | 2,405 | 89.9 | 5 | 0.2 | 260 | 9.7 | 3 | 0.1 | 2 | 0.1 |
| 8 | Jefferson | Southeast | 3,150 | 3,119 | 99.0 | 4 | 0.1 | 15 | 0.5 | 12 | 0.4 | -- | -- |
| 9 | Washington | East Central | 2,841 | 2,733 | 96.2 | 92 | 3.2 | 11 | 0.4 | 5 | 0.2 | -- | -- |
| Total, Denver County | | | 22,813 | 17,698 | 77.6 | 2,232 | 9.8 | 2,674 | 11.7 | 149 | 0.6 | 32 | 0.1 |

1/ Figures are based on unofficial head count made in the fall term of 1967.

2/ See Figure 10 for approximate location of schools in Denver County.

When total high school student enrollments are reviewed, the magnitude of students from each ethnic group follows the same order as the magnitude of each ethnic group in the general population. However, a significant element appears in the fact that the proportion of Negro and Spanish surname high school students is evidently greater than is the portion that these ethnic groups constitute of the total population.

The evidence seems to indicate that nearly 20 percent of the Denver County high school enrollments comprise Negro and Spanish surname students, while the two ethnic groups combined constitute about 15 percent of the general population in the county.

The opening of Denver Community College will enhance the educational opportunities for these minority group students, and assuming that they respond to the trend of post-high school education that has occurred nationally, it is possible that they would comprise a sizable portion of the day enrollments in the Denver community colleges.

## Projection of Denver Community College Enrollments

There was little empirical evidence to indicate potential enrollments in Denver Community College once one or more campuses are placed in operation. Therefore, MERI drew upon the experience of its panel of national consultants to develop guidelines for the progression rate that might be expected for high school graduates in the Denv : SMSA and other counties included in the proposed Denver Community College administration.

The relationship between the number of high school graduates and the size of community college enrollments varies widely from one city or county to another throughout the United States. For example, in San Mateo County, California, the total fall term day enrollments (13th and 14th grades) in the community college have historically been equal to 100 to 105 percent of the graduating high school class in the previous academic year. In St. Louis, Missouri, after five years of operation, entering 13th grade enrollments have consistently attracted about

20 percent of the high school graduates in their community college district. Approximately one-half of the students entering the 13th grade progress to the 14th grade in the St. Louis Community College system.

The enrollment experience in St. Louis community colleges appears to be particularly valuable in helping to develop guidelines for the Denver Community College because of similarities in population and community college operations. For example, the number of community college campuses in St. Louis is the same as the proposed number to be established in Denver; the three campus facilities in St. Louis had to be located in a manner that would serve both urban and suburban communities; and serving a significant contingency of minority group students in the campus located nearest central St. Louis was a consideration in program development and site selection, as it is in Denver. In addition, tuition is charged by the St. Louis Community College system, so that participation rates of the general population and high school graduates may be more similar to those that evolve in Denver than are participation rates in California community colleges, where no tuition is currently being charged.

After consideration of the available demographic data and the advice of the national consultants, MERI determined that in the first year of operation (1968) Denver Community College should anticipate attracting about 1,200 day students. This number is based on a 20 percent progression rate of high school graduates into 13th grade community college programs offered in the Denver Community College. A 50 percent progression rate was used to compute 14th grade enrollments so that total enrollments in the college for succeeding years could be determined; see Table 25 for a summary of the anticipated day enrollments in Denver Community College; Arapahoe Junior College and Metropolitan State College (junior college programs) are also indicated.

In the fall of 1969 the planned enrollment in Denver Community College should be approximately 2,500 students; in the third year of operation (1970), the total enrollment should approach 3,800 students, excluding the enrollment at Arapahoe Junior College. If the enrollment at

Table 25

ESTIMATED DAY ENROLLMENTS IN THE
DENVER COMMUNITY COLLEGE ADMINISTRATIVE AREA
(Selected Years)

| Fall Term | Denver Community College[1]/ | Arapahoe Junior College[2]/ | Metro-politan State College[3]/ | Total Day Enroll-ments |
|---|---|---|---|---|
| 1968 | 1,235 | 1,315 | 1,000 | 3,550 |
| 1969 | 2,555 | 1,485 | 1,140 | 5,175 |
| 1970 | 3,770 | 1,445 | 985 | 6,200 |
| 1975 | 8,640 | 1,860 | 500 | 11,000 |
| 1980 | 11,125 | 2,000 | -- | 13,125 |

1/ Includes all day enrollments in all campus locations and satellite programs offered by Denver Community College, except at Arapahoe Junior College, and vocational-technical programs offered at Metropolitan State College.

2/ Figures are based on the assumption that Arapahoe Junior College does not join the State Community College System by 1980.

3/ These figures are estimates of enrollments in community college programs. The number of such students is expected to decrease as Denver Community College goes into full operation, so that by 1980 no students are shown in community college programs.

Source: MERI.

Arapahoe is included by 1970, total day enrollments in the Denver Community College system should surpass 5,000.

If MERI's recommendations are accepted and followed by the State Board in assuming jurisdiction of all vocational-technical programs below the baccalaureate level, then the students projected for Metropolitan College could actually be counted as Denver Community College enrollments. Furthermore, if Arapahoe Junior College elects to join the state community college system, then the enrollments shown for Arapahoe would also be counted in the total day enrollments of Denver Community College. The right hand column of Table 25 shows the total anticipated day enrollments for selected years between 1968 and 1980, assuming that the two foregoing possibilities occur.

Distribution of Enrollments

A number of difficult planning problems were encountered by MERI when attempting to determine the distribution of day enrollments among the community colleges that will be opened by Denver Community College and existing programs at Arapahoe and Metropolitan State. The uncertainty about the disposition of Arapahoe Junior College regarding its permanent site location and its participation in the state community college system necessitated that two alternative patterns of student distribution be made.

Plan A for Enrollment Distribution

Plan A assumes that Arapahoe Junior College will not elect to join the state system, thereby creating the need for Denver Community College to establish a third college site by 1970 in order to meet its legislative obligation.

A summary of the assumptions and procedures used by MERI to derive the recommended enrollment guidelines for Denver Community College appears in Appendix G. The enrollment guidelines shown on Table 26 indicate that, if Arapahoe stays out of the state community college system, there will be in 1970 four community college operations in the Denver area with

Table 26

MERI MASTER PLANNING GUIDELINE FOR
DISTRIBUTION OF DAY ENROLLMENTS IN THE
DENVER COMMUNITY COLLEGE ADMINISTRATIVE AREA
(PLAN A)[1/]

| College | Fall Term Day Enrollments 1968 | 1969 | 1970 | 1975 | 1980 |
|---|---|---|---|---|---|
| Arapahoe (Arapahoe County) | 1,315 | 1,485 | 1,445 | 1,860 | 2,000 |
| Denver I (Adams County) | 1,235 | 1,600 | 1,430 | 2,870 | 3,910 |
| Denver II (Jefferson County) | -- | 950 | 1,340 | 3,225 | 4,255 |
| Denver III (unknown) | -- | -- | 1,000 | 2,545 | 2,960 |
| Total | 2,550 | 4,035 | 5,215 | 10,500 | 13,125 |
| Estimated Enrollment at Metropolitan State[2/] | 1,000 | 1,140 | 985 | 500 | 0 |
| Total, including Metropolitan State | 3,550 | 5,175 | 6,200 | 11,000 | 13,125 |

1/ Plan A is that Arapahoe Junior College will not join the State Community College System by 1980.

2/ Includes only community college students enrolled in vocational-technical programs at Metropolitan State College.

Source: MERI.

day enrollments of between 1,000 and 1,450 each. By 1975 it is anticipated that the Denver Community College campus located in Jefferson County will be the largest operation, with over 3,200 students. The other two Denver Community College campuses will contain between 2,500 and 2,900 students each. Arapahoe is expected to be the smallest college, with an enrollment of nearly 1,900.

In 1980 the Jefferson County campus is again expected to be the largest of the Denver Community Colleges, with an enrollment of over 4,200. The campus in Adams County should serve over 3,900 students and the third campus about 3,000 day enrollments. Arapahoe is expected to have about 2,000 students.

Plan B for Enrollment Distribution

Plan B assumes that Arapahoe will join the state system by 1970 and become the third campus of the Denver Community College system.

The distribution of students under Plan B is shown on Table 27. The evidence indicates that by 1980 the northern and western campuses of Denver Community College will each contain about 5,000 students and Arapahoe, serving the southeastern portion of the district, will have nearly 3,300 students.

The foregoing analysis of student enrollments in the Denver Community College system, at best, is only a guide for planning facilities and educational programs. It is suggested that the administration of the Denver Community College take immediate steps to survey the senior classes in the high schools located in the Denver service area in order to obtain general verification of the enrollment trends and distribution derived by MERI.

Priority of Occupational Programs

The existing and emerging employment opportunities in the Denver Metropolitan Area appear to be diversified. In both manufacturing and white collar occupations advances in science and technological innovations

Table 27

MERI MASTER PLANNING GUIDELINE FOR
DISTRIBUTION OF DAY ENROLLMENTS IN THE
DENVER COMMUNITY COLLEGE ADMINISTRATIVE AREA
(PLAN B)[1/]

| College | Fall Term Day Enrollments 1968 | 1969 | 1970 | 1975 | 1980 |
|---|---|---|---|---|---|
| Arapahoe (Arapahoe County) | 1,315 | 1,485 | 1,780 | 2,660 | 3,260 |
| Denver I (Adams County) | 1,235 | 1,600 | 1,820 | 3,800 | 5,040 |
| Denver II (Jefferson County) | -- | 950 | 1,615 | 4,040 | 4,825 |
| Total | 2,550 | 4,035 | 5,215 | 10,500 | 13,125 |
| Estimated Enrollment at Metropolitan State[2/] | 1,000 | 1,140 | 985 | 500 | 0 |
| Total, including Metropolitan State | 3,550 | 5,175 | 6,200 | 11,000 | 13,125 |

1/ Plan B is that Arapahoe Junior College will join the State Community College System by 1970.

2/ Includes only community college students enrolled in vocational-technical programs at Metropolitan State College.

Source: MERI.

make flexible training programs mandatory in secondary and post-secondary institutions.

The need for occupational programs in the Denver area covers a broad range (see Chapter VII). As Table 34 in that chapter indicates, in the Denver Metropolitan occupational education planning and programming area, educational needs exist in all of the eleven broad occupational families. Priority needs are identified in the following seven occupational families: business and office, engineering and technical, health, mechanical and repair, metal and plastic manufacturing and processing, personal services, and public services. In addition, early consideration should be given to introducing a hotel and restaurant management program at one of the Denver Community Colleges.

The evidence seems to indicate that some of these occupational programs could be placed in all of the proposed campus locations in the Denver area--for example, business and office occupations. In other cases, the most economical use of facilities and other resources would seem to warrant that a program be placed in only one campus to serve the entire Denver Metropolitan student population; for example, programs in the machine trades.

A continuing study of occupations will reveal new needs in the light of changing conditions. Like all colleges in major metropolitan areas, the Denver Community College system will have to plan on changing the content and methodology of its occupational programs as the college leadership is apprised of new needs of employers.

# VII OCCUPATIONAL FORECASTS AND PROGRAM NEEDS

## The Manpower Picture in Colorado

### Pattern of Past Growth

Colorado employment growth has paralleled that of population growth in past years and has been at a faster rate than that for the nation as a whole. Between 1960 and 1966, an average of over 18,000 new nonagricultural jobs have been filled each year in the state, an annual average increase of 3.2 percent. During this same period, the average annual growth rate at the national level was only 1.8 percent. Colorado's employment growth in the decade prior to 1960 was even more striking, with a total increase of 43.8 percent as contrasted with the total U.S. increase during the same period of 19.9 percent.

The pattern of growth by industry during the 1960-66 period shows that generally Colorado is following the national trends, which in some instances are accentuated in the state. For example, the annual average decrease in mining employment nationally was 2.1 percent, while the comparable Colorado figure was 2.8 percent. National annual average increases in employment in service industries was 4.4 percent, while Colorado's employment grew at a rate of 5.0 percent (Table 28).

Colorado is also experiencing the national phenomenon of a much higher rate of growth in nonproduction industries. With the exception of transportation, communication, and utilities, all nonproduction industries grew at a faster rate than did the production industries. In fact, during the 1960-66 period both agriculture and mining showed annual decreases in employment.

Table 28

## EMPLOYMENT CHANGE AND DISTRIBUTION IN COLORADO AND THE UNITED STATES BY INDUSTRY 1960-1966

| | Colorado | | | United States | | |
|---|---|---|---|---|---|---|
| Production Industries | Total Percent Change | Average Annual Change Rate | Percent of Total Employment 1966 | Total Percent Change | Average Annual Change Rate | Percent of Total Employment 1966 |
| Agriculture | -13.9% | -2.5% | 7.0% | -30.5% | -5.9% | 5.9% |
| Mining | -15.6 | -2.8 | 2.0 | -11.8 | -2.1 | .9 |
| Contract construction | 12.5 | 2.0 | 5.6 | 13.7 | 2.2 | 4.8 |
| Manufacturing | 12.4 | 2.0 | 14.7 | 13.6 | 2.2 | 28.1 |
| Nonproduction Industries | | | | | | |
| Transportation, communications, and utilities | 4.6 | 0.7 | 6.8 | 3.3 | 0.5 | 6.1 |
| Trade, wholesale and retail | 17.1 | 2.7 | 21.6 | 16.1 | 2.6 | 19.5 |
| Finance, insurance, and real estate | 25.4 | 3.8 | 4.7 | 15.6 | 2.5 | 4.6 |
| Services | 34.0 | 5.0 | 15.3 | 29.1 | 4.4 | 14.1 |
| Government | 35.5 | 5.2 | 22.3 | 29.9 | 4.5 | 16.0 |
| Total | 17.5% | 2.7% | 100.0% | 13.2% | 2.1% | 100.0% |

Source: MERI, based on data from U.S. Department of Labor and Colorado Department of Employment.

## Anticipated Future Growth

### United States

The U.S. Department of Labor has projected a total civilian work force in the United States in 1975 of 91.4 million workers, an increase of 27 percent over 1964. Not all industries will share equally in this growth. Manufacturing and transportation, communication, and public utilities are expected to grow at a slower than average rate, whereas contract construction, trade, services, and government will increase at a faster than average rate. Employment in finance, insurance, and real estate is expected to grow at about the average for all industries. The agriculture and mining industries are not only expected to decline in relative importance, but also in the actual total number of persons employed. Nationally, agricultural employment is expected to decline 21 percent between 1964 and 1975, while employment in mining will decline by about 1 percent. These projections illustrate the anticipated continuing trend of accelerated growth rate in nonproducing industries, and the declining growth rate of goods-producing industries. Employment in goods-producing is anticipated to increase approximately 17 percent, while employment in nongoods-producing industries will increase approximately 38 percent.[1/]

### Colorado

Projections of employment by industry indicate that Colorado will follow the national decline in agriculture, and that significant expansions will occur in construction; services; trade; finance, insurance, and real estate; and government. The manufacturing industry in Colorado, however, is expected to show greater growth than is anticipated nationwide. A few segments of the manufacturing group are expected to remain stable. The mining industry in Colorado, rather than declining as is expected nationally, will probably remain stable or even

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1/ U.S. Department of Labor, America's Industrial and Occupational Manpower Requirement, 1964-1975.

expand slightly, depending on technological developments which may open additional mining opportunities in the state. Transportation is also expected to be a stable industry, maintaining about the same proportion of employment, with modest growth in gross number of employees.[1/]

MERI has prepared manpower projections for Colorado by industry to 1975, utilizing, in general, techniques developed by the U.S. Bureau of Labor Statistics. These projections are shown in Figure 12, which indicates anticipated total employment in the state of 908,000 by 1975, an increase of 35.6 percent over the 1966 total of 669,600. The breakdown by industry shows continuing declines in both relative proportion and absolute numbers in agriculture. Contract construction; finance, insurance, and real estate; and services are expected to grow faster than the statewide average of all employment, while transportation and government will grow less fast. Employment in manufacturing and trade is expected to grow at about the same rate as total employment for the state.

MERI has projected nonagricultural employment to 1975 for Colorado's SMSAs. Figure 13 shows the projected nonagricultural employment for each of Colorado's three SMSAs, and for the state from 1950 to 1975.

## Occupational Analysis

For purposes of planning occupational programs, manpower needs by industry are less important than are indications of manpower needs by occupation. To make Colorado's occupational education planning as specific as possible, MERI has prepared projections of manpower needs for selected occupations to 1975 (Table 29).

### MERI Projection Method

These projections were developed by using the method outlined by the U.S. Department of Labor, Bureau of Labor Statistics. The basic

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1/ Vocational Education Research Coordinating Unit of Colorado State University, Occupations in Colorado, Part I, Outlook by Industries, 1966.

**PLEASE TURN PAGE FOR FIGURE 12**

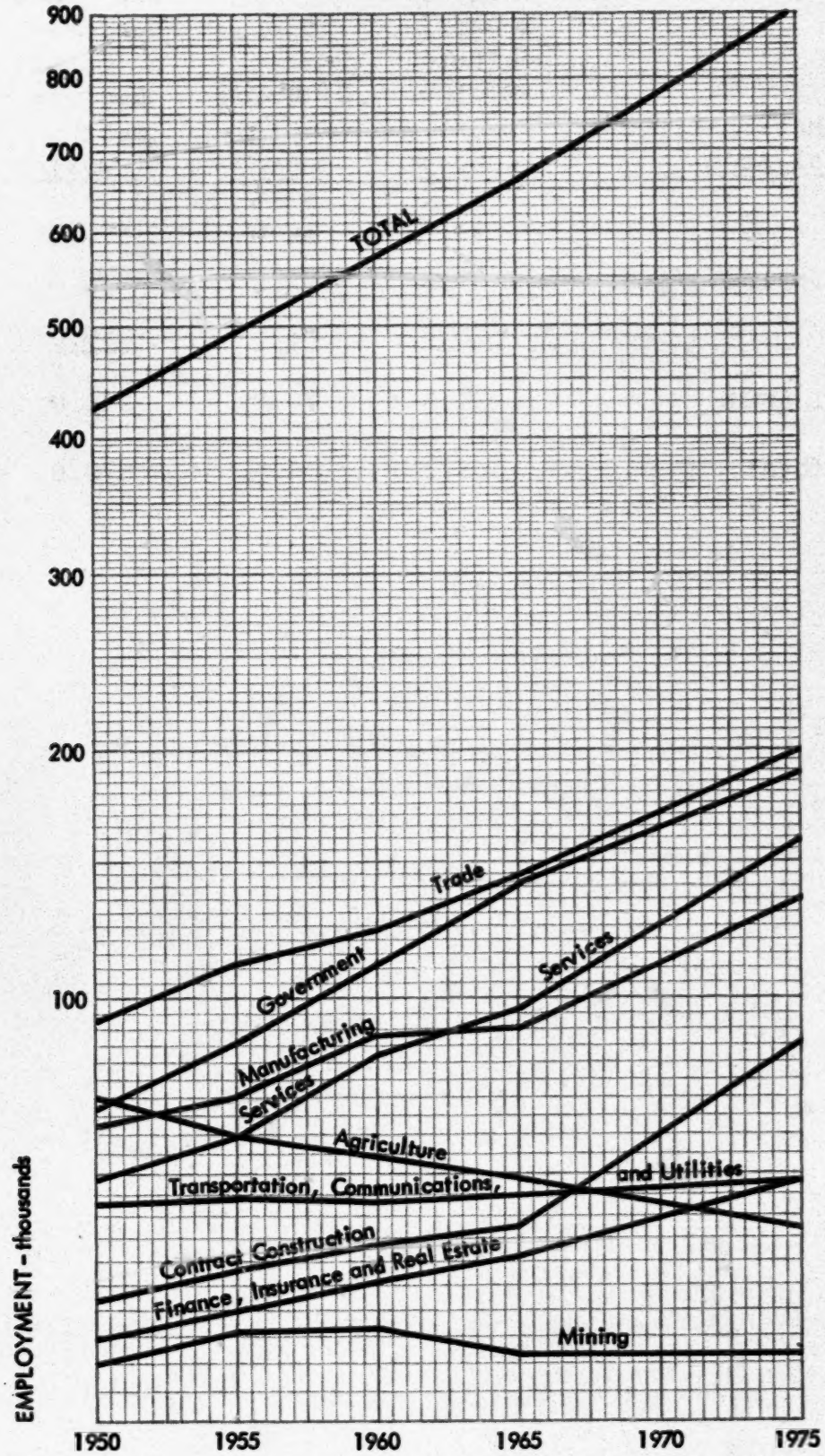
**AND FACING TABLE**

## BASIC INFORMATION FOR FIGURE 12

| Industry Group | 1950 Actual Employment (000s) | 1950 Percent of Total Employment | 1975 Projected Employment (000s) | 1975 Projected Percent of of Total Employment |
|---|---|---|---|---|
| Agriculture | 69.7 | 16.3% | 38 | 4.2% |
| Mining | 10.0 | 2.3 | 12 | 1.4 |
| Contract Construction | 22.1 | 5.2 | 80 | 8.8 |
| Manufacturing | 61.6 | 14.4 | 132 | 14.5 |
| Transportation, Communications, and Utilities | 42.4 | 9.9 | 48 | 5.3 |
| Retail and Wholesale Trade | 92.3 | 21.6 | 200 | 22.0 |
| Finance, Insurance, and Real Estate | 14.7 | 3.4 | 48 | 5.3 |
| Services | 48.3 | 11.3 | 160 | 17.6 |
| Government | 66.8 | 15.6 | 190 | 20.9 |
| Total | 427.9 | 100.0% | 908 | 100.0% |

Figure 12

EMPLOYMENT BY INDUSTRY
STATE OF COLORADO
1950-1975
(In Thousands)



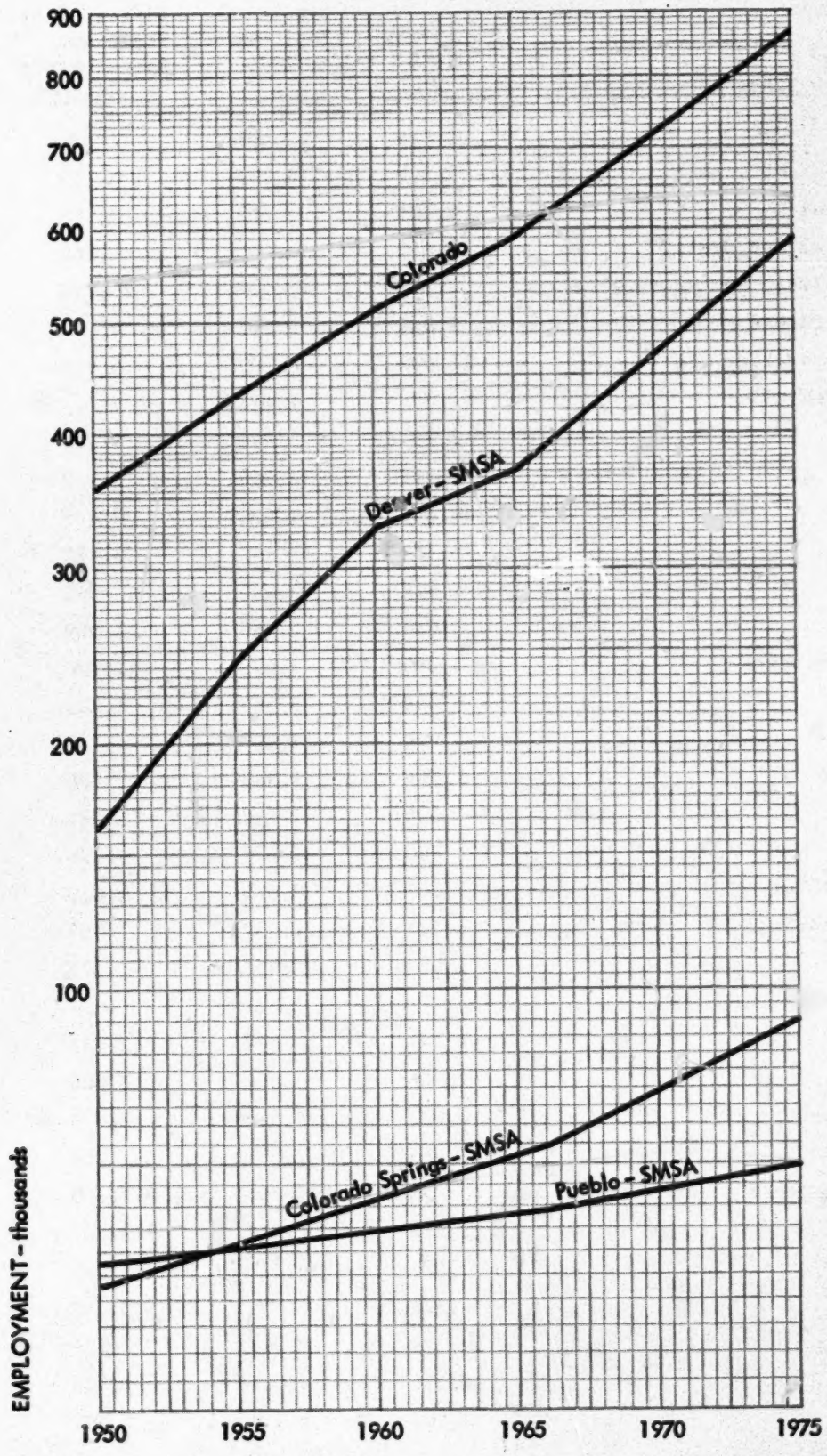

Source: Colorado State Department of Employment, for information through 1965. Projections by MERI based upon formula developed by U.S. Department of Labor.

## BASIC INFORMATION FOR FIGURE 13

| Standard Metropolitan Statistical Area | 1950 Actual Nonagricultural Employment (000s) | 1950 Percent of Total Employment | 1975 Projected Nonagricultural Employment (000s) | 1975 Projected Percent of Total Employment |
|---|---|---|---|---|
| Denver | 193.7 | 54.0% | 590.0 | 68.0% |
| Colorado Springs | 27.8 | 7.8 | 90.0 | 10.0 |
| Pueblo | 29.8 | 8.3 | 50.0 | 6.0 |
| Total SMSA | 251.3 | 70.1% | 730.0 | 84.0% |
| Colorado Total | 358.2 | 100.0% | 870.0 | 100.0% |

Figure 13

## NONAGRICULTURAL EMPLOYMENT METROPOLITAN AREAS AND STATE OF COLORADO 1950–1975 (In Thousands)




Source: Colorado State Department of Employment, for information through 1965. Projections by MERI based upon formula developed by U.S. Department of Labor.

Table 29

## MANPOWER REQUIREMENTS FOR SELECTED OCCUPATIONS TO 1975, STATE OF COLORADO

| Occupations | Employment 1960 A | Projected Employment 1975 B | Fifteen Year Replacement Requirements C | Total Additional Workers Required (B-A+C) | Additional Workers Required per Year (D÷15) |
|---|---|---|---|---|---|
| Draftsmen | 2,150 | 3,468 | 336 | 1,654 | 110 |
| Surveyors | 561 | 1,218 | 159 | 816 | 54 |
| Nurses, professional | 6,801 | 8,807 | 5,385 | 7,391 | 493 |
| Technicians, medical and dental | 1,643 | 3,995 | 1,269 | 3,621 | 241 |
| Stenographers, typists, and secretaries | 24,335 | 42,438 | 25,530 | 43,633 | 2,910 |
| Office machine operators | 3,353 | 9,261 | 4,725 | 10,633 | 710 |
| Bookkeepers and accounting clerks | 11,607 | 14,932 | 5,895 | 9,220 | 615 |
| Clerical and kindred | | 91,621 | | | |
| Insurance sales | 3,734 | 5,429 | 1,710 | 3,405 | 227 |
| Real estate sales | 2,928 | 3,254 | 2,220 | 2,546 | 170 |
| Other sales | 39,538 | 51,430 | 20,445 | 32,337 | 2,156 |
| Carpenters | 8,832 | 11,645 | 3,525 | 6,338 | 423 |
| Brickmasons | 1,914 | 3,072 | 561 | 1,719 | 115 |
| Electricians | 3,034 | 5,380 | 1,009 | 3,355 | 225 |
| Painters and paperhangers | 3,390 | 6,079 | 1,770 | 4,459 | 297 |
| Plumbers | 2,949 | 5,465 | 1,125 | 3,641 | 243 |
| Machinists | 3,016 | 4,400 | 1,110 | 2,494 | 166 |
| Sheet metal workers | 1,046 | 1,942 | 336 | 1,232 | 82 |
| Toolmakers | 536 | 1,590 | 286 | 1,340 | 89 |
| Airplane mechanics | 880 | 1,452 | 174 | 746 | 50 |
| Motor vehicle mechanics | 7,307 | 9,624 | 1,650 | 3,967 | 265 |
| Office machine mechanics | 323 | 1,057 | 93 | 827 | 55 |
| Radio TV mechanics | 1,029 | 1,498 | 171 | 640 | 43 |
| Printing and crafts | | 2,427 | | | |
| Bakers | 1,147 | 777 | 432 | 62 | 4 |
| Welders | 2,566 | 4,218 | 1,005 | 2,657 | 177 |
| Laundry and dry cleaners | 4,033 | 4,540 | 1,920 | 2,427 | 162 |
| Meat cutters | 1,565 | 2,651 | 780 | 1,866 | 125 |
| Private household workers | 13,728 | 17,856 | 11,760 | 15,888 | 1,060 |
| Firemen | 1,113 | 2,270 | 507 | 1,664 | 111 |
| Policemen | 2,527 | 5,811 | 1,245 | 4,529 | 302 |
| Cooks | 6,378 | 7,939 | 3,435 | 4,996 | 333 |
| Waiters | 10,719 | 13,117 | 7,155 | 9,553 | 637 |
| Attendants, hospital | 4,226 | 9,075 | 3,990 | 8,839 | 590 |
| Nurses, practical | 2,603 | 3,950 | 2,700 | 4,047 | 270 |
| Farm workers | | 33,820 | | | |

Source: MERI.

method of computation involves the development of employment projections by industry (shown in table facing Figure 12), and the application of national matrix factors to the projections. The resulting figure is the anticipated employment by occupation in 1975. Actual employment in the base year (1960) is then subtracted from this figure to determine the total number of new jobs that will be developed in the interim. The next step is to apply nationally developed retirement and death factors to total employment in order to arrive at an estimate of the number of new workers needed for replacement purposes. This number is then added to those required by economic expansion, to give an indication of the total number of new workers needed by occupation. Caution is expressed here: first, these are only rough approximations of manpower requirements between now and 1975; and, second, these projections indicate only the total number of new workers needed in each of the occupations and do not take into account any factor relating to supply of workers, such as migration.

## Other Analyses

In 1962, Mr. Robert Vaughan, of the Mountain States Telephone Company, prepared an analysis and made projections of manpower requirements by occupation to 1970 for the Denver metropolitan area. These projections have been used by many other agencies in the Denver area; however, we have been unable to identify any updating of this information or any attempts to project beyond 1970. These data need to be updated to reflect the experience of this decade, which is almost over. The needs as identified in 1962 are shown in Table 30. A perusal of this table shows that in the period 1960-70 the Vaughan study indicates a total of 180,000 new workers needed in the Denver metropolitan area, and projects a total employment of 480,000 persons in that area by 1970.

Table 30

MANPOWER REQUIREMENTS FOR SELECTED OCCUPATIONS
DENVER SMSA
1960-1970

| Occupation | 1960 Employment | Estimated 1970 Employment | Additional Workers Needed 1/ |
|---|---|---|---|
| Designers and draftsmen | 2,200 | 3,700 | 1,600 |
| Surveyors | 200 | 300 | 100 |
| Technicians | | | |
| Medical and dental | 1,100 | 1,700 | 600 |
| Electrical and electronic | 800 | 1,600 | 800 |
| Other engineering and physical sciences | 1,100 | 1,900 | 900 |
| Other (n.e.c.) | 800 | 1,500 | 700 |
| Managers, officials, proprietors, including farm | 40,100 | 51,800 | 20,800 |
| Salaried | 24,800 | 36,100 | 16,600 |
| Self-employed | 15,300 | 15,700 | 4,200 |
| Clerical and kindred workers | 65,900 | 89,900 | 31,000 |
| Bookkeepers | 6,300 | 7,700 | 2,000 |
| Cashiers | 3,000 | 4,200 | 1,500 |
| Shipping and receiving clerks | 1,300 | 1,800 | 700 |
| Stock clerks and storekeepers | 1,500 | 1,800 | 500 |
| Other clerical and kindred workers | 53,600 | 74,700 | 27,700 |
| Sales workers | 29,100 | 38,200 | 13,900 |
| Craftsmen, foremen, and kindred workers | 46,700 | 60,500 | 22,400 |
| Cabinetmakers and patternmakers | 400 | 600 | 300 |
| Carpenters | 4,600 | 5,500 | 1,900 |
| Electricians | 1,700 | 2,200 | 800 |
| Machinists and job setters | 2,100 | 2,800 | 1,100 |
| Mechanics and repairmen | 12,100 | 15,800 | 5,800 |
| Plumbers and pipefitters | 1,800 | 2,400 | 900 |
| Printing craftsmen | 1,800 | 2,400 | 800 |
| Tinsmiths, coppersmiths, and sheet metal workers | 700 | 900 | 300 |
| Toolmakers, die makers, and setters | 400 | 600 | 300 |
| Other craftsmen and kindred workers | 12,300 | 16,500 | 6,600 |
| Operatives and kindred workers | 44,300 | 58,500 | 19,700 |
| Apprentices | 700 | 1,800 | 1,800 |
| Assemblers | 1,000 | 1,400 | 500 |
| Welders and flame-cutters | 1,400 | 1,900 | 600 |
| Service workers, including private households | 40,000 | 53,500 | 21,500 |
| Laborers, including farm | 17,600 | 19,900 | 5,100 |

1/ Includes replacement needs.

Source: Robert D. Vaughan, Jobs and the Future, published by Mountain States Telephone Co., 1962.

## Colorado SMSAs

Available data indicate employment patterns in the three metropolitan areas of Colorado, by industry, showing significant variations from statewide employment patterns. For example, in the Denver SMSA, mining and government are a significantly lower proportion of the state's total than might be expected, considering the high proportion of the total state employment concentrated there. On the other hand, finance, insurance, real estate, and wholesale trade are significantly higher in proportion to the state's total.

In the Colorado Springs area the significant concentration of employment in service industries reflects a higher proportion of the state's total employment in this industry group. All other industries, except retail trade and contract construction, are significantly lower than the proportion of total employment in the area.

The Pueblo SMSA shows still other variations, with a higher proportion of employment in services and in manufacturing than the proportion of these industries in total statewide employment. Significantly lower proportions are found in government; finance, insurance, real estate; contract construction; and mining (Table 31).

MERI's projections of employment in the state's metropolitan areas (Figure 13) indicate that by 1975 approximately 84 percent of the total employment in the state will be in the three SMSAs. Realistically, in talking about Colorado's employment growth we are talking primarily about growth in Denver, Colorado Springs, and Pueblo. In fact, if recent trends continue, employment is likely to continue to concentrate in those three areas in the years to come. An analysis of Table 31 shows that in 1966 approximately 59.4 percent of the state's employment was in the five-county Denver SMSA, while 8.4 percent was in Colorado Springs, and 6.0 percent was in Pueblo. Colorado Springs is a faster growing labor market than is Pueblo, as can be seen from Figure 13.

Discussions with planners at the state and local level indicate that past trends are likely to continue, and that Colorado Springs will increase in relative importance, while Pueblo will decrease.

Table 31

WAGE AND SALARY EMPLOYMENT BY INDUSTRY FOR COLORADO
AND ITS STANDARD METROPOLITAN STATISTICAL AREAS
1966

| Industry | Number Employed in Colorado (000's) | Denver SMSA | | Colorado Springs SMSA | | Pueblo SMSA | | Percent of Total State Employment in Combined SMSAs |
|---|---|---|---|---|---|---|---|---|
| | | Number (000's) | Percent of State Employment | Number (000's) | Percent of State Employment | Number (000's) | Percent of State Employment | |
| Mining | 13.0 | 3.7 | 28.5% | 0.1 | 0.8% | --1/ | 0.1% | 29.4% |
| Contract Construction | 37.7 | 23.2 | 61.5 | 4.7 | 12.5 | 1.5 | 4.0 | 78.0 |
| Manufacturing | 98.6 | 70.4 | 71.4 | 5.1 | 5.2 | 9.1 | 9.2 | 85.8 |
| Transportation and Public Utilities | 45.7 | 31.5 | 68.9 | 2.7 | 5.9 | 2.4 | 5.3 | 80.1 |
| Trade (wholesale & retail) | 144.7 | 97.2 | 67.2 | 9.8 | 6.8 | 6.2 | 4.3 | 78.3 |
| Finance, Insurance, and Real Estate | 31.6 | 24.0 | 75.9 | 2.7 | 8.5 | 1.2 | 3.8 | 88.2 |
| Service and Miscellaneous | 102.1 | 68.3 | 66.9 | 17.7 | 17.3 | 8.7 | 8.5 | 92.7 |
| Government | 149.2 | 73.1 | 49.0 | 12.2 | 8.2 | 10.2 | 6.8 | 64.0 |
| Total Nonagricultural Employment | 622.6 | 391.4 | 62.9% | 55.0 | 8.8% | 39.3 | 6.3% | 78.0% |
| Agricultural | 47.0 | 6.2 | 13.2% | 1.2 | 2.6% | 1.1 | 2.3% | 18.1% |
| Total Wage and Salary Employment | 669.6 | 397.6 | 59.4% | 56.2 | 8.4% | 40.4 | 6.0% | 73.8% |

1/ Less than 100.

Source: Colorado State Department of Employment.

## New and Emerging Occupations

In planning occupational programs, an analysis of past trends reveals only a part of the necessary story. There has been much discussion in recent years about the accelerating rate of technological change in the U.S. economy. The results of this rapid change are reflected in rapidly shifting occupational patterns. New occupations are being established each day as technology creates new materials and new processes.

The jobs that are being created through technological innovation, for the most part, are those for highly skilled technicians in all of the major physical, biological, and natural sciences. In a recent publication of the U.S. Department of Labor, the immediate need for such technicians is characterized as critical.[1/] Table 32 below, taken from this publication, indicates the number of technicians by category that could be employed in the nation as of this date. Add to this the anticipated growth between now and 1975, and the picture begins to emerge of total technician needs.

Table 32

TECHNICIANS THAT COULD BE EMPLOYED
NOW IN THE UNITED STATES

| New Types of Technicians | Number |
|---|---|
| 1. Bio-medical hospital equipment | 50,000 |
| 2. Electromechanical | 100,000 |
| 3. Electronic computer service | 20,000 |
| 4. Communications and telemetry | 10,000 |
| 5. Computerized drafting | 5,000 |
| 6. Numerically controlled machine tool | 10,000 |
| 7. Chemical manufacturing process control | 5,000 |
| 8. Agricultural production and service | 75,000 |
| 9. Water pollution control | 10,000 |
| Total | 285,000 |

1/ U.S. Department of Labor, Bureau of Labor Statistics, Technician Manpower Requirements, Resources and Training Needs.

## Need for Manpower Information System in Colorado

The paucity of manpower information in Colorado necessitates a comment upon the need for developing a continuing program for gathering and utilizing manpower information. To do a realistic job of planning, the State Board needs to have available to it annually updated projections of manpower requirements on a statewide basis, and for the SMSAs. This information must be analyzed against information on in-migration and on occupational program completions in order to make a continuous assessment of occupational education needs by program.

In 1967 the Colorado Department of Employment published an analysis of the occupational demand for selected occupations in electronics and machine trades in the state. This study identified the need for trained manpower in a variety of occupations by 1971. As a generalization, that report shows a large and continuing need for skilled manpower in a variety of jobs. Industrialists indicated that these shortages were having a detrimental effect in encouraging new businesses to locate in Colorado and in encouraging businesses to expand, and would continue to have such an effect. Yet these same industrialists believe that there has been almost no activity in expansion of training programs for any of the positions listed in this report. One employer has indicated that his firm will not plan for any additional expansion in Colorado until such time as it is assured that the educational system of the state is prepared to work cooperatively toward the training of skilled manpower that will be required by their operations.

Table 33 shows a summary of the results of the Department of Employment study, currently being updated. From this table we can see the anticipated manpower needs and industry's assessment of its ability to train needed workers. The difference between those workers that industry can train and those needed can be considered to be the responsibility of the public education system and the proprietary schools. The deficit cannot be made up with present programs in public schools, and significant expansion and upgrading will be required if industry is to meet its manpower needs by 1971.

Table 33

## ESTIMATED NEED FOR TRAINED WORKERS IN THE ELECTRONICS AND MACHINE TRADES INDUSTRIES STATE OF COLORADO September 1971

| | Estimated Number Needed for Expansion A | Estimated Number Needed for Replacement B | Expected Number To Be Company Trained C | Estimated Number Requiring School Training (A+B)-C |
|---|---|---|---|---|
| **Electronics:** | | | | |
| Electronics laboratory technician | 1,300 | 520 | 235 | 1,585 |
| Electronics technician | 1,200 | 500 | 220 | 1,480 |
| Systems-testing-laboratory technician | 100 | 20 | 15 | 105 |
| Draftsman, electronics | 170 | 50 | 30 | 190 |
| Design draftsman, electromechanisms | 110 | 40 | 5 | 145 |
| Programmer, engineering and scientific | 250 | 200 | 70 | 380 |
| Writer, technical publications | 110 | 40 | 25 | 125 |
| Electronic test technician | 1,200 | 450 | 1,400 | 250 |
| Electronic-scale-assembler and tester | 5 | 0 | 0 | 5 |
| Electronic assembler, developmental | 90 | 70 | 50 | 110 |
| Electronic-scale subassembler | 930 | 340 | 1,300 | (30) |
| Tester, systems | 130 | 30 | 0 | 160 |
| Electronic technician, automated process | 20 | 10 | 10 | 20 |
| Electronic assembler | 1,510 | 590 | 660 | 1,440 |
| Electronics-sensing-equipment assembler | -- | -- | -- | -- |
| Electronics assembler | 1,430 | 550 | 550 | 1,430 |
| Chassis assembler | 80 | 40 | 110 | 10 |
| Electronic maintenance technician | 220 | 70 | 0 | 290 |
| Electronics mechanic | 220 | 70 | 0 | 290 |
| Customer-engineering specialist | -- | -- | -- | -- |
| Radioactivity-Instrument maintenance technician | -- | -- | -- | -- |
| Public-address serviceman | -- | -- | -- | -- |
| Total Electronics | 9,075 | 3,590 | 4,680 | 7,985 |
| **Machine Trades:** | | | | |
| Tool engineer | 170 | 140 | 20 | 290 |
| Tool designer | 230 | 120 | 5 | 345 |
| Tool and die maker | 620 | 200 | 100 | 720 |
| Machinist | 1,360 | 1,070 | 280 | 2,150 |
| Machinist I (journeyman) | 480 | 370 | 150 | 700 |
| Machinist, production | 700 | 600 | 80 | 1,220 |
| Machinist, tool room | 180 | 100 | 50 | 230 |
| Machinist apprentice | 460 | 200 | 180 | 480 |
| Tool machine operator (total surveyed) | 1,900 | 1,270 | 270 | 2,900 |
| Tool machine set-up operator | 80 | 110 | 60 | 130 |
| Automatic-screw-machine operator | 150 | 60 | 20 | 190 |
| Drill press operator | 335 | 240 | 0 | 575 |
| Grinder operator, tool | 160 | 80 | 50 | 190 |
| Lathe operator, engine or turret | 470 | 340 | 100 | 710 |
| Milling machine set-up operator | 370 | 320 | 10 | 680 |
| Boring-machine set-up operator, jig | 40 | 20 | 0 | 60 |
| Punch press operator I | 300 | 100 | 30 | 370 |
| Total Machine Trades | 8,005 | 5,340 | 1,405 | 11,940 |

Source: Colorado Department of Employment, 1967.

## Program Recommendations

### Criteria for Making Program Recommendations

In evaluating program recommendations there are two questions that need to be answered: (1) Should a program be offered? If the answer is yes: (2) Where should it be offered? The criteria for determining whether or not a program should be offered include use of training, availability of facilities, organization, and staff, and availability of students.

1. Use of training. The first criterion is whether persons completing the program will find immediate use for the training, either through employment or upgrading. For this reason our recommendations are limited to those areas where the Colorado employment possibilities are sufficient so that graduates of programs can be assured of obtaining a position.

2. Availability of facilities, organization, and staff. If these facilities are not now available, can they be developed, and at what cost? In some cases the lack of facilities will limit programs. For example, registered nursing programs and other medically related programs require clinical facilities available in local hospitals for part of the training programs. If these facilities are not available, then programs cannot be offered.

3. Availability of students.

   a. Number of students available for occupational programs. This involves analysis of the total number of students potentially available in the state.

   b. Occupational interest of students. Here the concern is with the development of student interest

through occupational counseling and guidance programs. Unless a student is made aware of the need for certain types of skills and abilities, and of the economic value of these skills, it will be difficult to entice him into these programs.

c. Student preparation. This element raises the problem of vertical articulation through various occupational programs. Students without grounding in the basics for a particular program are not, in effect, available for that program. They can be made available, however, through the offering of developmental or pre-technical programs.

The second question to be asked in planning occupational programs (assuming a program is to be offered) is where it should be offered. The factors utilized in making recommendations in this area include the following:

1. Student interest and need for mobility. Wherever possible, occupational programs should be planned for and offered on the basis of occupational families. Related programs should be offered, as nearly as possible, at the same facility in order that students may change more freely from one program to another with a minimum loss of time and energy. By grouping programs according to occupational families, greater opportunity is provided for students to see other occupations in the same family and to make more realistic occupational choices.

2. Grouping by occupational family. This can provide for the development of core curricula, which can be the basis for many of the programs within the family. Specialization is then built upon the core curricula in the latter part of the training.

3. Availability of field facilities. Some programs can only be offered where field facilities are available. In some cases field facilities are not necessary, but are highly desirable. Although a program for the FAA A&P license could be offered entirely on-campus, there are many advantages to using the hangar and shop facilities of a local airport for a portion of the training. In still other programs, the use of community facilities might enable a school to present programs that could not otherwise be offered. For example, a community college might not be able to build a facility to offer a program in hotel and restaurant management. However, by using community facilities on an intern basis, such a program might reasonably be offered.

4. Location of students. The economics involved in transporting and housing large numbers of students away from home will have important planning implications. This means that some programs will be offered only in the population centers of the state and that students from outlying areas who want to participate will become resident students. The alternative of placing one-of-a-kind programs in isolated areas would mean that many students in population centers would have to become resident students in the outlying areas. Such an allocation of educational resources would not be economic for the state as a whole.

## Methodology for Analyzing Program Needs

MERI has identified statewide vocational-technical program needs based primarily on an analysis of statewide manpower forecasts. Those

forecasts that were used included the following:

- MERI projections to 1975 of manpower needs for selected occupations (see Table 29).
- Occupational Demand Study of Selected Occupations in Electronics and Machine Trades in Colorado, Colorado Department of Employment.
- Occupations in Colorado, Parts I and II, Vocational Education Research Coordinating Unit of Colorado State University.
- Jobs and the Future, Robert D. Vaughan, Task Group on Post High School Education in the Denver Metropolitan Area.
- Personnel in Hospitals, Colorado Hospital Association.
- Colorado Cooperative Manpower Plan, Fiscal Year 1968, Colorado Manpower Coordinating Committee.

Colorado trends and projections have been evaluated against national trends and projections. Where the Colorado situation is likely to be affected by the national experience, modifications have been made in the projections of Colorado manpower requirements. In addition, the analysis has included employment needs on the national level in those occupations where persons in Colorado might expect to find employment outside the state.

It is important to emphasize at this point that the program needs are based on statewide analysis. Because of the distribution of employment throughout the state, it is unrealistic to attempt to identify in any detail the manpower needs of smaller geographic or political subdivisions. Furthermore, the mobility of Colorado's student population and labor force would tend to indicate that factors other than local manpower needs will be relatively more important in deciding where to locate recommended programs.

Finally, program recommendations have been evaluated against experience in states with strong community college emphasis, to determine whether or not those factors that have led to success or failure of programs are operative in Colorado. Where national experience has applicability, the program recommendations have been modified accordingly.

The next step in the procedure, after deciding which programs should be offered, was to determine the approximate size that should be planned. Here existing program enrollments were considered, as were the estimated manpower needs for the state. National experience was again introduced to evaluate the reasonableness of the size recommended. Other factors that were made a part of this analysis included the effect of apprenticeship programs on anticipated enrollments, the extent to which training is generally considered as necessary for pre-employment preparation, the availability of existing training resources, both public and private, and special needs created by changing social and economic conditions within the state.

## Recommended Location of Programs

After size, the next consideration was where programs should be offered to best serve the state. The recommended location of programs was based on the following factors: location of students, location of required community resources, employment possibilities, existing programs, and regional economic factors. These factors were given different weights for different programs and balanced against other considerations previously mentioned.

## Recommended Programs

On the pages that follow, MERI has presented a summary of recommended vocational-technical programs, in a format that facilitates review. The information is presented in several dimensions, including occupational families, location, size, and priority. Although this summary gives a total picture of occupational education programs

recommended at this time, it should not be thought of as final or complete. Table 34 is a beginning. If the residents of Colorado are to have the benefit of a comprehensive system of occupational education, program planning must be a continuous process. Only in this way can program offerings be kept current with Colorado's employment needs.

The occupational family concept places occupations into groupings that share common knowledge, skill, and ability requirements. Such an arrangement facilitates curriculum analysis and makes it easier to see the relationship of recommended programs.

MERI has divided Colorado into six occupational education planning and programming areas (see Figure 14). These areas are:

1. Denver Metropolitan Area
2. Colorado Springs Metropolitan Area

2b. Northeast Colorado

3. Pueblo Metropolitan Area

3b. Southeast Colorado

4. Western Slope

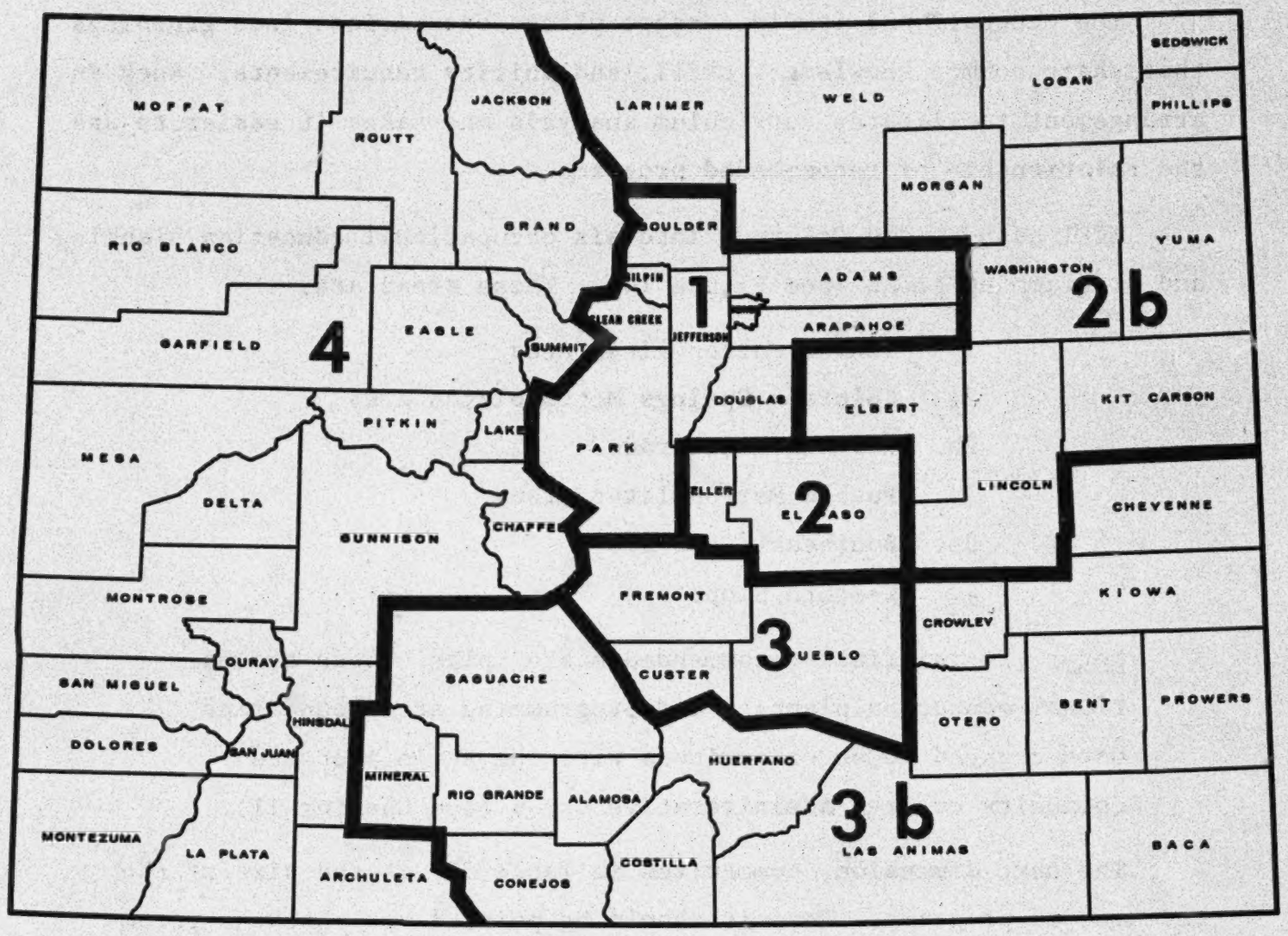
Note: In the final recommended master plan, these occupational education planning and programming area boundaries were changed to be coterminous with the seven proposed community college administrative areas (see Chapter II).

The next dimension, summarized in Table 34, is the size of the recommended programs. Here it should be pointed out that the recommendations relate only to programs to be offered outside regular secondary level schools. Specifically, they relate to community college, adult education, and special post-secondary programs.

Next it should be pointed out that the size of the program is discussed in terms of the number of completions required each year, i.e., the number of students who graduate or complete their courses. This means that enrollments will have to be much larger than the recommended number of completions, to replace those who do not complete the program. The estimated number of completions is presented

Figure 14

## PRELIMINARY OCCUPATIONAL EDUCATION PLANNING AND PROGRAMMING AREAS STATE OF COLORADO




1 DENVER METROPOLITAN AREA

2 COLORADO SPRINGS AREA

2b NORTHEAST COLORADO

3 PUEBLO METROPOLITAN AREA

3b SOUTHEAST COLORADO

4 WESTERN SLOPE

in broad categories to indicate the desired degree of flexibility regarding program planning.

The estimated number of completions required is based on the analysis of statewide manpower needs, with modifications to account for the fact that all training will not take place in community college and adult programs. The designations of estimated completions should not therefore be considered as indicative of Colorado's manpower needs. For example, the number of associate degree completions recommended for registered nurses is less than one-half of the total statewide needs. Hospital and university programs can be expected to supply the remaining required completions.

The remaining dimension for consideration with respect to program recommendations is that of priority. As a generalization it can be stated that Colorado should move ahead as quickly as possible with all occupational education programs in the community colleges. The state is seriously behind in the development of programs to serve the needs of its residents. The faster the programs are made available, the earlier Colorado can begin to achieve its manpower potential.

Aside from a generalized sense of urgency which should pervade program planning, there are some specific vocational-technical programs that must have the highest priority. There are well established continuing critical shortages of all health occupational personnel, of electronics technicians, and of machinists. Programs in these occupations should be started without delay.

Additionally Table 34 shows other occupations for which there is sufficient continuing need to justify high priority of program development. Others may need to be considered "high priority" because of factors that become evident during later stages of program planning. In such event the State Board may wish to add other programs to its priority list.

Finally it should be pointed out that the program recommendations presented in Table 34 are not intended to indicate that other programs may not be needed to meet specific shortages at the local level.

MDTA types of programs can and should be offered as particular needs are identified within any occupational planning and programming area. If such programs are to be offered on a continuing basis, however, they should be integrated into the statewide master plan.

## Table 34

## VOCATIONAL-TECHNICAL EDUCATION PROGRAM NEEDS BY OCCUPATIONAL EDUCATIONAL PLANNING AREAS

Legend: 1 --Denver Metropolitan
2 --Colorado Springs Metropolitan
2a--Northeast Colorado
3 --Pueblo Metropolitan
3a--Southeast Colorado
4 --Western Slope

| Vocational-Technical Programs by Occupational Families | Priority Programs[2] | Level of Need[1] Occupation Education Planning Areas 1 | 2 | 2a | 3 | 3a | 4 |
|---|---|---|---|---|---|---|---|
| **Agriculture, Horticulture, and Forestry** | | | | | | | |
| Agriculture | | | | | | | |
| Production | | | | M | | M | M |
| Agri-business and management | | | | M | | M | M |
| Engineering and mechanics | | | | M | | M | M |
| Ornamental horticulture, landscaping, and nursery management | | H | M | | M | | |
| Forestry | | | | | | | M |
| **Applied and Graphic Arts** | | | | | | | |
| Performing arts | | Not to be considered as occupational programs | | | | | |
| Applied arts | | | | | | | |
| Commercial art and advertising | | M | M | | M | | |
| Industrial design | | M | | | | | |
| Interior decorating | | M | | | | | |
| Photography | | M | M | | M | | |
| Graphic arts[3] | | M | | | | | |
| **Business and Office Occupations** | | | | | | | |
| Bookkeeping and accounting | * | Should be available in all business programs in all areas | | | | | |
| Business management | | | | | | | |
| General | * | Should be available in all business programs in all areas | | | | | |
| Hotel-restaurant | | M | M | | | | |
| Industrial management | | VH | M | | M | | |
| Airline operations | | M | | | | | |
| Data processing | * | VH | H | M | M | M | M |
| Marketing and merchandising | * | Should be available in all business programs in all areas | | | | | |
| Finance, insurance, and real estate | | VH | M | | M | | |
| Secretarial-clerical | * | Should be available in all business programs in all areas | | | | | |
| Traffic and transportation | | M | | | | | |
| **Construction Occupations** | | | | | | | |
| Craftsmen[3] | | | | | | | |
| Carpenters | | H | M | | M | | M |
| Electricians | | M | M | | M | | M |
| Masons | | M | M | | M | | |
| Painters | | M | M | | M | | |
| Plumbers | | M | M | | M | | |
| Sheet metal workers | | M | M | | M | | |
| Construction technology (e.g., scheduler, estimator, expeditor, cost analyst, etc.) | | M | P | | | | |

Note: Footnotes appear at the end of the table.

## Table 34 (Cont.)

| Vocational-Technical Programs by Occupational Families | Priority Programs | Level of Need Occupation Education Planning Areas 1 | 2 | 2a | 3 | 3a | 4 |
|---|---|---|---|---|---|---|---|
| **Engineering and Technical Occupations** | | | | | | | |
| Engineering technician | | Pre-technology programs should be offered at all large high schools | | | | | |
| Chemical | | M | | | | | |
| Civil | | M | P | | | | |
| Electronic | * | H | H | | M | | M |
| Mechanical | * | M | M | | | | |
| Draftsman | * | H | M | | M | | |
| Technical writer | | M | | | | | |
| Technical illustrator | | M | | | | | |
| **Health Occupations** | | | | | | | |
| Registered nurse[4/] | * | VH | H | | M | | M |
| Licensed practical nurse[4/] | | H | M | Offer as needed in local areas | | | |
| Dental occupations | | | | | | | |
| Dental hygienist | | M | | | | | |
| Dental technician | | M | | | | | |
| Dental assistant | | H | M | | M | | |
| Medical laboratory technician | * | M | M | | | | |
| X-Ray technician | | M | M | | | | |
| Medical records technician | | M | | | | | |
| Medical assistant | | M | M | | M | | |
| Hospital attendant-mental[4/] | | M | M | | M | | |
| Dietetic aide | | M | | | | | |
| Opthalmic optics | | M | | | | | |
| Bio-medical equipment technician | | M | | | | | |
| Sanitation technologist | | M | | | | | |
| Inhalation therapist | | M | | | | | |
| Other para-medical | * | Programs to be offered as needed in local areas | | | | | |
| **Mechanical and Repair Occupations** | | | | | | | |
| A & P mechanics | | M | | | | | |
| Internal combustion engine mechanics | | Include in pre-technology programs at all large high schools | | | | | |
| Automotive[3/] | * | VH | H | M[5/] | M | M[5/] | M[5/] |
| Heavy duty diesel[3/] | | | | M[5/] | | M[5/] | M[5/] |
| Small engine | | M | | | | | |
| Auto-body repairman[3/] | | H | M | | M | | |
| Appliance repairman | | | | | | | |
| Home appliances | | M | M | | M | | |
| Office machines | | M | M | | | | |
| Vending machines | | M | P | | | | |
| Electronic equipment repairman | * | VH | H | | M | | M |
| Industrial maintenance | * | M | M | | M | | |

## Table 34 (Cont.)

| Vocational-Technical Programs by Occupational Families | Priority Programs | Level of Need Occupation Education Planning Areas 1 | 2 | 2a | 3 | 3a | 4 |
|---|---|---|---|---|---|---|---|
| **Metal and Plastic Manufacturing and Processing Occupations** | | | | | | | |
| Machine trades[3] | | | | | | | |
| Tool and die maker | * | H | | | M | | |
| Machinist | * | VH | M | | M | | |
| Machine operator | * | VH | M | | M | | |
| Welding | | M | | M[5] | | M[5] | M[5] |
| Plastics technology | | P | | | | | |
| **Personal Service Occupations** | | | | | | | |
| Cosmetology | | H | M | | M | | M |
| Barbering | | M | M | | | | |
| Laundry and dry cleaning | | M | M | | | | |
| Home services | * | M | M | Provide as needed in local areas | | | |
| Tailor-seamstress | | M | | | | | |
| Food preparation and service[4] | | | | | | | |
| Cook | * | H | H | | | | |
| Waiter-waitress | * | M | M | Provide as needed in local areas | | | |
| **Public Services** | | | | | | | |
| Police science | * | VH | H | M | M | M | M |
| Fire science | | M | M | | M | | M |
| Recreation aide | | M | | | | | M |
| Teacher aide | | M | M | | M | | |
| Nursery school aide[4] | | H | M | | M | | |
| Librarian assistant[4] | | M | | | | | |
| Social service aide[4] | | P | P | | | | |
| Institutional group worker[4] | | M | M | | | | |
| **Miscellaneous** | | | | | | | |
| Gunsmithing | | | | | | M | |
| Flight school[4] | | P | | | | | |
| Upholstery | | M | | | | | |
| Watch repair | | M | | | | | |
| Shoe repair | | M | | | | | |

1/ Based on the approximate number of completions required per year on a statewide basis. Statewide needs are allocated to planning areas based on criteria mentioned under Program Recommendations.
- M = Moderate need--15 to 30 completions per year
- H = High need--30 to 70 completions per year
- VH = Very high need--more than 70 completions per year
- P = Plan for possible future offering

2/ Priority programs which are indicated by an asterisk (*) are needed immediately and should receive high priority for early offering in the planning areas indicated.

3/ Coordinate programs closely with apprenticeship programs.

4/ May be limited by availability of community facilities.

5/ These courses should be offered in conjunction with the agricultural mechanics program.

# VIII FINANCING THE MASTER PLAN

To implement the proposed master plan, substantial increases in state capital and operating fund appropriations for community colleges will be required through 1980. Major factors contributing to these increases are: (1) elimination of local financial support as existing colleges join the state system, (2) sharp increases in the number of community college students as metropolitan campuses are constructed, (3) increases in the proportion of vocational-technical students, and (4) increases in instructional cost per student as teachers' salaries increase and student contact hours decrease.

This chapter presents projections for capital and operating fund requirements for the Colorado Community College system through 1980. To develop these projections, it was necessary to make several assumptions, as will be discussed below. It is essential that the long run financial projections be reviewed periodically to determine the impact of possible changes in the conditions upon which these assumptions are based.

## Capital Fund Requirements

For the period 1968 through 1980, approximately $95 million will be required for five new community college campuses and three community college centers. An additional $16 million will be required through 1980 for new equipment and capital additions to existing campuses. This is based on the assumption that all community colleges enter the state system by 1970.

### New Campuses and Centers

To project capital funding requirements for new campuses and community college centers in the state system, it is necessary to relate capital cost to day student enrollment capacity (see Table 35). Based

Table 35

CAPITAL COST ESTIMATES FOR NEW COMMUNITY COLLEGE CAMPUSES[1/]
(1970 Dollars)

| | | |
|---|---|---|
| **Buildings and Equipment** | | |
| Per gross square feet: | | |
| Construction cost (Class I) | $28 | |
| Equipment (fixed and movable) | 5 | |
| Fees (architect, engineering, etc.) | 3 | |
| Total | $36 | |
| Per day student capacity: (110 square feet x $36) = | | $3,960[2/] |
| **Site Acquisition and Development**[3/] | | 450 |
| Total capital cost per day student capacity | | $4,410 |

1/ Based on initial construction of a campus for 2,000 or more day students.

2/ Excludes student residential construction.

3/ Includes average costs for land acquisition and rough grading, parking, outside utilities, PE fields and courts.

Source: MERI.

upon a review of capital expenditure data for community colleges in Colorado and other states, and consideration of inflationary trends, it is estimated that capital requirements for new campuses in Colorado will average $4,410 per day student by 1970. This should be considered as a minimum standard cost, based upon a campus of at least 2,000 students. Included in this cost is $450 per student for site acquisition and development, and $3,960 per student for buildings and equipment. It is recognized that site costs will vary substantially from campus to campus; in some cases land may even be donated to the college. The facilities included in this cost estimate are: (1) lecture classrooms, (2) well equipped laboratories and shops, (3) library, (4) multipurpose small auditorium (400-500 capacity) for speech arts, large class lectures, community events, (5) indoor and outdoor facilities for physical education instruction and athletics, (6) faculty and administrative offices, (7) student center, and (8) student study space in various locations. Student residences are not included in facility capital requirements, since it is assumed they will be financed on a self-liquidating basis. Capital costs could be increased by 10 to 20 percent if larger sites, location on higher value land, or special buildings are deemed necessary for specific campuses.

From these unit costs, the total capital requirements shown in Table 36 for the period from 1968 through 1980 were projected. For the purposes of projection, the twelve-year time span was broken into three periods; 1968-71, 1972-75, and 1976-80. During the first period, construction of three campuses will begin; two in the Denver area and one in Colorado Springs. The total cost of these projects when completed will be about $40 million.

During the second period (1972-75) construction of two additional new campuses (Denver and Weld/Larimer) and a community college center will be constructed at a total cost of about $33.8 million. Finally, during the 1976-80 period, capacity of the Denver campuses will be expanded by 2,000 day students and the El Paso campus by 2,000 students. Two new community college centers will also be constructed. The total cost will be about $21.5 million.

## Table 36

## PROJECTED CAPITAL REQUIREMENTS FOR NEW COMMUNITY COLLEGE CAMPUSES 1968-1980

| Period | Facilities | Cost | Total Cost |
|---|---|---|---|
| 1968-71 | Two Denver campuses, total of 7,000 day student capacity (7,000 students @ $4,410/student) | $30,900,000 | |
| | Additional land acquisition for ultimate development of two campuses | 300,000 | |
| | El Paso campus; 2,000 day student capacity (2,000 students @ $4,410/student) | 8,800,000 | |
| | | | $40,000,000 |
| 1972-75 | Third Denver campus; 4,000 day student capacity (4,000 students @ $5,350/student) | $21,400,000 | |
| | Additional land for ultimate development | 200,000 | |
| | Weld/Larimer campus; 2,000 day student capacity (2,000 students @ $5,350/student) | 10,700,000 | |
| | Community college center | 1,500,000 | |
| | | | 33,800,000 |
| 1976-80 | Additional 2,000 day student capacity for Denver campuses (2,000 students @ $4,500/student) | $9,000,000 | |
| | Additional 2,000 day student capacity for El Paso campus | 9,000,000 | |
| | Two community college centers | 3,500,000 | |
| | | | 21,500,000 |
| Total (1968-1980) | | | $95,300,000 |

Note: Figures rounded to the nearest $100,000.

Source: MERI.

During the 1972-75 period, an average construction cost of $5,350 per day student capacity was used. This represents an average annual increase of 5 percent over the cost of $4,410 per student used in the 1968-71 period. For capacity additions in Denver during the 1976-80 period, a cost of $4,500 per student was used. This reduction from the per student cost of construction for new campuses is caused by (1) lower space requirements per student since facilities such as the student union, physical education plant and administrative offices will not be significantly increased and (2) negligible site acquisition costs, since land for expansion was acquired at the time of initial development. These factors more than offset inflationary increases in construction cost, resulting in a lower cost per student.

If Arapahoe and Aims junior colleges do not join the state system, some of the above capital requirements will be shifted from the state to local districts. Specifically, the approximate reductions in state capital outlay would be:

| Period | Reduction in State Funding |
|---|---|
| 1968-71 | $4,400,000 |
| 1972-75 | 4,000,000 |
| 1975-80 | 4,500,000 |
| Total | $12,900,000 |

The capital construction plans described in Table 36 are based upon day enrollment projections contained in Table 27. No separate provision in initial construction budgets has been made for high school vocational-technical students who may utilize some community college facilities during part of the day. It is felt that these students can be accommodated with additions to specific vocational-technical facilities and equipment, as required when campuses become fully utilized by community college day enrollments. Funds to accommodate high school vocational-technical students are provided under the operating capital budget discussed below.

## Operating Capital Outlays

Operation of existing community colleges, and new colleges after the initial construction funding, requires periodic capital outlay for new equipment and minor building additions. A review of college budgets indicates that these capital outlays are highly irregular for any individual campus, but can be averaged over the state to reduce annual fluctuations.

It is estimated that total operating capital outlays will be $16 million over the 12-year period to 1980 (see Table 37). The majority of these funds will go to campuses that exist at the present time, although some funds will be required for the new campuses in Denver, Colorado Springs, and the Weld/Larimer area.

Table 37

PROJECTED CAPITAL REQUIREMENTS FOR NEW EQUIPMENT AND ADDITIONS TO EXISTING CAMPUSES 1968-1980

| Period | Average Annual Cost | Total Cost |
|---|---|---|
| 1968-69/1971-72 | $ 800,000 | $ 3,200,000 |
| 1972-73/1975-76 | 1,300,000 | 5,200,000 |
| 1976-77/1979-80 | 1,900,000 | 7,600,000 |
| Total 1968-1980 | | $16,000,000 |

Source: MERI.

## Sources of Capital Funds

Capital funds for community college construction and equipment are primarily a state responsibility under existing legislation. However, a significant and growing opportunity exists for obtaining federal funds to reduce the financial burden imposed on the state by the demand for

higher education facilities. For example, during the five years from 1962-63 to 1966-67, funds obtained under the Higher Education Facilities Act accounted for about 17 percent of total construction appropriations for Colorado institutions of higher education.

The proportion of community college capital requirements which can be obtained from federal grants cannot be accurately projected. If all available sources of federal funds are utilized, perhaps 10 to 20 percent of total capital requirements can be obtained from federal sources.

## Operating Costs and Revenues

Total operating expenses for community colleges (excluding capital outlay) are projected to increase from $15.5 million in 1970-71 to $48.2 million in 1980-81 (see Table 38). This increase is due both to rising enrollment and increasing operational costs per student.

Table 38

PROJECTED TOTAL OPERATING EXPENSES
FOR COLORADO COMMUNITY COLLEGES

| Year | FTE Students 1/ | Cost per FTE 2/ | Total Cost |
|---|---|---|---|
| 1970-71 | 14,800 | $1,050 | $15,500,000 |
| 1975-76 | 22,100 | 1,340 | 29,600,000 |
| 1980-81 | 28,200 | 1,710 | 48,200,000 |

1/ Obtained from Table 40.

2/ Excludes capital outlay; projections based on 5 percent per annum increase in operating expense per FTE.

Source: MERI.

If all community colleges join the state system by 1970, the state will be required to fund about 80 percent of this operating expense; federal and student sources will cover the remainder (see Table 39).

State community college operating fund requirements are projected to increase from $12.3 million in 1970-71 to $40.9 million in 1980-81.

Table 39

SOURCES OF REVENUE FOR
COMMUNITY COLLEGE OPERATION

| Year | Operating Cost | Sources of Revenue[1/] | | |
|---|---|---|---|---|
| | | Federal | Student Tuition[2/] | State |
| 1970-71 | $15,500,000 | $1,500,000 | $1,700,000 | $12,300,000 |
| 1975-76 | 29,600,000 | 2,500,000 | 2,500,000 | 24,600,000 |
| 1980-81 | 48,200,000 | 4,000,000 | 3,300,000 | 40,900,000 |

1/ Based on the assumption that all colleges will join the state system by 1970.

2/ Tuition revenue computed at $90/year for Colorado residents and $675/year for out-of-state students; 10 percent tuition waiver for hardship cases.

Source: MERI.

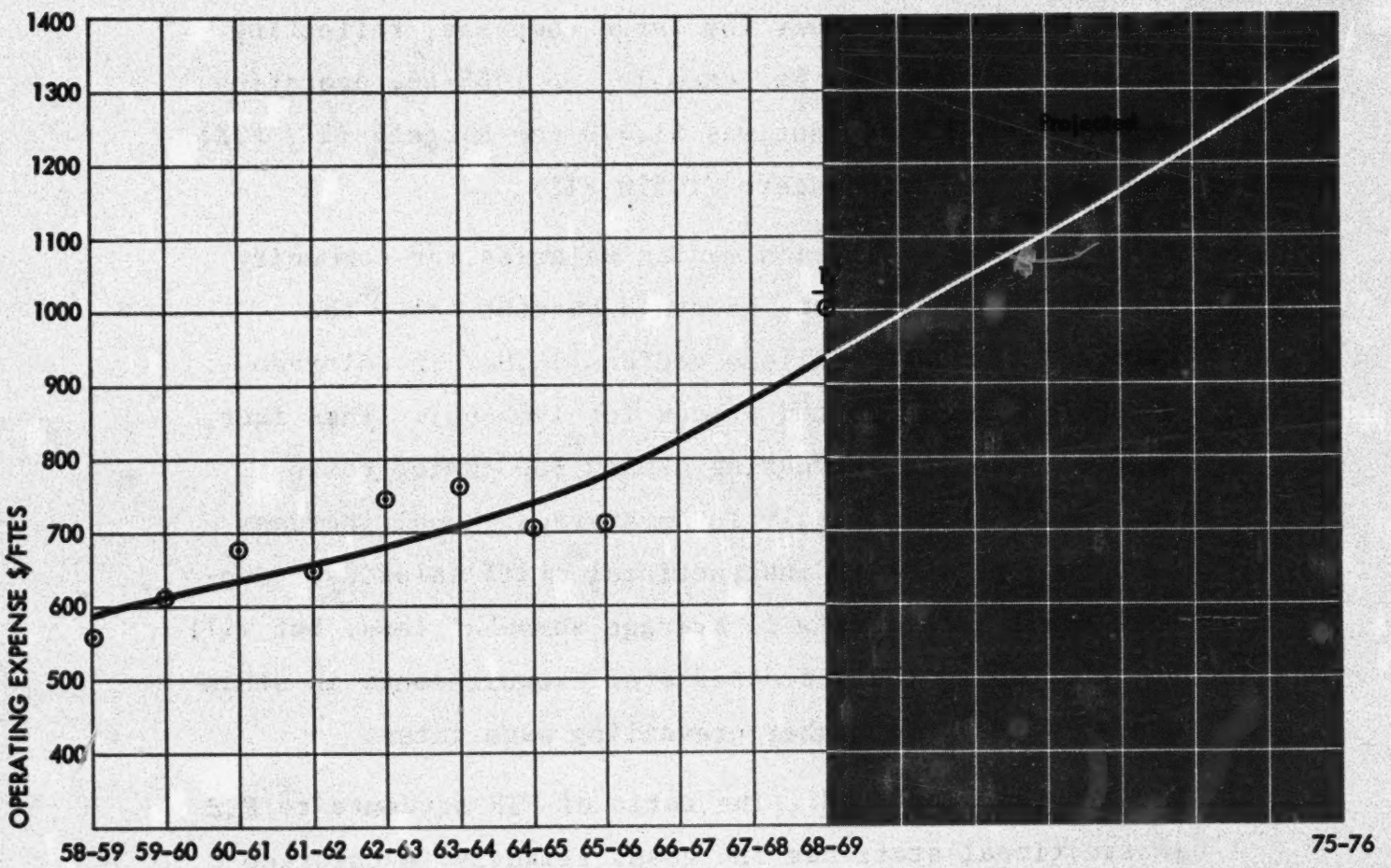
Operating Costs

Community college operating costs per full-time equivalent (FTE) student have risen by nearly 70 percent over the past 10 years in Colorado (see Figure 15). Costs are projected to rise from a statewide average of about $930 per FTE student in 1968-69 to $1,050 per FTE student in 1970-71. Costs will continue to rise to $1,340 per FTE student in 1975-76 and $1,710 per FTE student in 1980-81. This reflects an average annual increase of 5 percent in operating cost per FTE student.

In any given year, future community college operational costs are likely to vary above or below the trend line shown in Figure 15. This results from the fact that a number of opposing cost factors interact

Figure 15

AVERAGE OPERATING EXPENSE PER FTE STUDENT
COLORADO COMMUNITY COLLEGES
1958-59 - 1975-76




1/ Based on budget recommendation for 4 state system colleges only.

Source: MERI

to determine the overall average cost for the state. These factors include:

1. New campus startup expenses. Operational costs per student are normally higher in the first several years of operation.

2. Campus size distribution. Operational costs per student are substantially lower for large campuses, reflecting economies of scale. For example, in 1965-66, operating expense per FTE student was $1,470 for Rangely (217 FTE) and $630 for Northeastern (1,510 FTE).

3. Salary levels. Colorado median salaries for community college instructors are about 18 percent below the national community college median ($6,877 in Colorado versus $8,361 in United States for 1965-66). This fact, coupled with the increasing demand for junior college personnel, should result in an average annual increase of 6 to 7 percent in instructional staff salaries. Support staff increases will average somewhat less, but will be affected by the increased staff requirements in urban areas, which have higher prevailing wage rates.

4. Faculty teaching load. The ratio of FTE students to FTE instructional staff has increased slightly in Colorado community colleges from 18 in 1958-59 to 21.5 in 1966-67. National data indicate that this trend may reverse in the future, as faculty members seek a lower number of student contact hours, resulting in higher instructional costs per student.

5. Instructional program. The increased proportion of vocational-technical student enrollment in community colleges (approaching 50 percent by 1975) will increase average operating expense per student. On the basis of recent studies, it is estimated that average unit costs in vocational-technical courses (except business and office

occupations) run 20 to 50 percent above liberal arts programs.

6. Proportion of part-time evening students. Operational costs for part-time evening students (adjusted to full-time equivalents) are less than for full-time day students. Since the part-time FTE students in Colorado community colleges is projected to increase from about 4 percent of total FTE students in 1968 to 11 percent in 1980, operating costs per FTE should be reduced slightly.

The net effect of these opposing impacts on operational unit costs cannot be precisely determined for any given year. However, it is projected that the factors tending to increase costs will outweigh those tending to decrease costs over the period through 1980, resulting in the projected upward trend in costs per student, as shown in Figure 15.

In order to figure total operating costs for state community colleges, projections of FTE students were made (see Table 40). To develop these projections, conversion factors determined from Colorado community college operating experience were applied to head count projections contained in Table 41. Conversion factors are as follows:

| | |
|---|---|
| FTE/resident day enrollment | .93 |
| FTE/out-of-state day enrollment | 1.02 |
| FTE/adult evening enrollment | .15 |

Combining FTE and cost projections, the total estimated operating cost for community colleges is presented in Table 38. Annual operating cost will increase from $15.5 million in 1970-71 to $48.2 million in 1980-81.

## Operating Revenues

Colorado community colleges have historically received operating revenue from student tuition and fees, as well as from local, state, and federal government sources (see Table 14, Chapter IV). In recent years the proportion of local government funds has diminished substantially, while increases in state funding have made up most of the difference.

Table 40

PROJECTED FULL-TIME EQUIVALENT STUDENTS
FOR COMMUNITY COLLEGES
STATE OF COLORADO
1968-1980

| Type of Student | 1968 | 1969 | 1970 | 1975 | 1980 |
|---|---|---|---|---|---|
| Day in-state | 9,060 | 11,230 | 13,160 | 18,730 | 22,990 |
| Day out-of-state | 780 | 840 | 950 | 1,580 | 1,900 |
| Subtotal | 9,840 | 12,070 | 14,110 | 20,310 | 24,890 |
| Adult part-time | 460 | 550 | 680 | 1,810 | 3,280 |
| Total | 10,300 | 12,620 | 14,790 | 22,120 | 28,170 |

Table 41

PROJECTED ENROLLMENTS (HEAD COUNT)
FOR COMMUNITY COLLEGES
STATE OF COLORADO
1968-1980

| Type of Student | 1968 | 1969 | 1970 | 1975 | 1980 |
|---|---|---|---|---|---|
| Day in-state | 9,700 | 12,025 | 14,100 | 20,050 | 24,600 |
| Day out-of-state | 765 | 825 | 925 | 1,555 | 1,865 |
| Subtotal | 10,465 | 12,850 | 15,025 | 21,605 | 26,465 |
| Adult part-time | 3,005 | 3,690 | 4,550 | 12,030 | 21,890 |
| Total | 13,470 | 16,540 | 19,575 | 33,635 | 48,355 |

Source: MERI.

For the purpose of projecting sources of revenue, it is assumed that all community colleges will enter the state system by 1970, thus eliminating all local financial support for college operations. A discussion of revenue sources follows.

Student Payments. Three tuition and fee schedules are currently in effect for each community college: one for students from the local district, one for Colorado resident students from other districts, and one for out-of-state students (see Table 4, Chapter IV). Student tuition and fees range from a low of $120 per year for local district students at Aims to $900 per year for out-of-state students at Colorado Mountain.

State system colleges will have a uniform tuition charge which has not currently been set. In this analysis the following assumptions are made:

1. Tuition for Colorado resident students will be $90 per year, with a 10 percent waiver for hardship cases.
2. Tuition for out-of-state students will be $675 per year, with 10 percent waiver for hardship cases. (This may in fact be lower if tuition arrangements are worked out in neighboring states.)
3. Student fees will be set to cover direct student expenses only and will make no net contribution to college operating expense.

On the basis of these assumptions, tuition revenue is projected to increase from $1.7 million in 1970-71 to $3.3 million in 1980-81 (Table 39).

Federal Contributions. The Vocational Education Act of 1963, the Manpower Development and Training Act of 1963, the Higher Education Facilities Act of 1963, and the Higher Education Act of 1965 evidence the trend toward increasing federal financial support for education.

In Colorado, federal sources of revenue have increased from 2 percent of total community college operating revenue in 1958-59 to 6 percent in 1965-66.

It is felt that the federal share of community college operating revenue will continue to increase, particularly as increased amounts of vocational education funds are made available to community colleges. Federal expenditures in Colorado for vocational education totaled $2.5 million in 1966-67, although only a small proportion went to junior colleges.

Federal financial support for community colleges in Colorado is therefore estimated to increase from $312,000 in 1965-66 to $1.5 million in 1970-71 (Table 39). By 1980, federal contributions to operating expenses are estimated to be $4 million.

State Support. Under the assumption that all community colleges are in the state system, remaining revenues required to meet operating expenses will be derived from the state. State support for junior colleges is thus calculated as a residual to balance revenues and expenditures. Annual state expenditure for junior college operation is estimated to increase from $2.7 million in 1965-66 to $12.3 million in 1970-71. State annual expenditures are further projected to reach $24.6 million by 1975-76 and $40.9 million by 1980-81 (Table 39).

Local Support. As previously mentioned, local support is not explicitly considered in the operating budget. In the event, however, that districts that are not currently in the system do not join by 1970,[1/] local support would amount to approximately $2.1 million in 1970-71 (assuming that state support of $500/FTE is continued). State expenditures would therefore be reduced by that amount.

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1/ These districts are Mesa, Aims, Northeastern, Arapahoe, and Colorado Mountain.

# A P P E N D I X E S

Table A-1

POPULATION AND PROJECTIONS BY PROPOSED COMMUNITY COLLEGE ADMINISTRATIVE AREA AND COUNTY
1967-1980

| Administrative Area and County | Population 1967 | Projected Population 1980 | Percent Change 1967-1980 |
|---|---|---|---|
| **Area 1** | | | |
| Denver | 477.0 | 515.0 | 8.0% |
| Jefferson[1/] | 209.0 | 357.0 | 70.8 |
| Adams[1/] | 163.0 | 210.0 | 28.8 |
| Arapahoe[2/] | 139.0 | 189.0 | 36.0 |
| Boulder | 110.0 | 178.0 | 61.8 |
| Douglas | 6.5 | 20.0 | 207.7 |
| Clear Creek | 3.6 | 4.0 | 11.1 |
| Park | 1.6 | 2.0 | 25.0 |
| Gilpin | 0.8 | 1.0 | 25.0 |
| Total Area 1 | 1,110.5 | 1,476.0 | 32.9% |
| **Area 2** | | | |
| Pueblo[1/] | 122.9 | 175.0 | 42.4% |
| Otero[2/] | 24.8 | 25.0 | 0.8 |
| Fremont | 21.6 | 21.0 | -2.8 |
| Prowers[2/] | 13.2 | 13.2 | 0.0 |
| Bent | 6.8 | 6.0 | -11.8 |
| Baca | 6.3 | 5.4 | -14.3 |
| Crowley | 3.4 | 2.8 | -17.6 |
| Cheyenne | 2.7 | 2.3 | -14.8 |
| Kiowa | 2.2 | 1.8 | -18.2 |
| Custer | 1.2 | 1.0 | -16.7 |
| Total Area 2 | 205.1 | 253.5 | 23.6% |
| **Area 3** | | | |
| Las Animas[2/] | 16.8 | 14.0 | -16.7% |
| Rio Grande | 11.5 | 11.0 | -6.3 |
| Alamosa | 10.0 | 9.5 | -5.0 |
| Huerfano | 8.0 | 8.0 | 0.0 |
| Conejos | 8.3 | 7.5 | -9.6 |
| Saguache | 4.3 | 4.0 | -7.0 |
| Costilla | 3.7 | 2.5 | -32.4 |
| Mineral | 0.5 | 0.4 | -20.0 |
| Total Area 3 | 63.1 | 56.9 | -9.8% |

Note: Footnotes appear at the end of the table.

Table A-1 (Continued)

| Administrative Area and County | Population 1967 | Projected Population 1980 | Percent Change 1967-1980 |
|---|---|---|---|
| Area 4 | | | |
| Mesa[2] | 53.0 | 70.0 | 32.1% |
| Garfield[2] | 14.0 | 22.0 | 57.1 |
| Montrose | 20.5 | 22.0 | 7.3 |
| Delta | 15.3 | 15.0 | -2.0 |
| Lake[2] | 9.0 | 10.0 | 11.1 |
| Chaffee | 9.8 | 9.0 | -8.2 |
| Moffat | 6.9 | 8.0 | 15.9 |
| Gunnison | 6.4 | 7.0 | 9.4 |
| Rio Blanco[2] | 5.0 | 6.5 | 30.0 |
| Eagle | 5.4 | 6.0 | 11.1 |
| Routt | 6.3 | 5.8 | -7.9 |
| Pitkin | 3.2 | 4.0 | 25.0 |
| Grand | 3.7 | 3.5 | -5.4 |
| Summit | 1.9 | 2.5 | 31.6 |
| Jackson | 1.6 | 1.5 | -6.3 |
| Ouray | 1.7 | 1.5 | -11.8 |
| Subtotal | 163.7 | 194.3 | 18.7% |
| La Plata[3] | 18.2 | 20.8 | 14.3% |
| Montezuma[3] | 13.6 | 15.0 | 10.3 |
| Archuleta[3] | 2.7 | 2.5 | -7.4 |
| Dolores[3] | 1.7 | 1.5 | -11.8 |
| San Miguel[3] | 2.1 | 1.5 | -28.6 |
| San Juan[3] | 0.9 | 0.7 | -22.2 |
| Hinsdale[3] | 0.1 | 0.1 | 0.0 |
| Subtotal | 39.3 | 42.1 | 7.1% |
| Total Area 4 | 203.0 | 236.4 | 16.5% |

Table A-1 (Continued)

| Administrative Area and County | Population 1967 | Projected Population 1980 | Percent Change 1967-1980 |
|---|---|---|---|
| **Area 5** | | | |
| Larimer | 70.0 | 104.0 | 48.5% |
| Weld[2/] | 81.0 | 98.0 | 21.0 |
| Total Area 5 | 151.0 | 202.0 | 33.8% |
| **Area 6** | | | |
| Logan[2/] | 20.0 | 21.0 | 5.0% |
| Morgan | 19.4 | 20.7 | 6.7 |
| Yuma | 8.6 | 8.0 | -7.0 |
| Washington | 5.9 | 5.0 | -15.3 |
| Phillips | 4.2 | 3.8 | -9.5 |
| Sedgwick | 3.8 | 3.5 | -7.9 |
| Total Area 6 | 61.9 | 62.0 | 0.2% |
| **Area 7** | | | |
| El Paso[1/] | 202.0 | 320.0 | 58.4% |
| Kit Carson | 7.3 | 6.5 | -11.0 |
| Lincoln | 4.9 | 4.4 | -10.2 |
| Elbert | 3.9 | 3.8 | -2.6 |
| Teller | 3.0 | 3.5 | 16.7 |
| Total Area 7 | 221.1 | 338.2 | 53.0% |
| Total Colorado | 2,015.7 | 2,625.0 | 30.2% |

Note: Counties are listed in rank order according to 1980 population projection. Four Corners counties are separately identified.

1/ Counties with proposed or recommended community colleges by 1970 or shortly thereafter.

2/ Counties with operating community colleges as of fall term 1967.

3/ Four Corners counties.

Source: MERI from (1) Population Estimates, 1970 to 1985 (revised), U.S. Department of Commerce, Bureau of the Census, March 1967; (2) "Population Projections for Colorado Counties, 1960-2020," Colorado State Budget Office, February 1967.

Table A-2

ESTIMATED NUMBER OF 11TH AND 12TH GRADERS BY
COMMUNITY COLLEGE ADMINISTRATIVE AREA

| Administrative Area | 1970 | 1975 | 1980 |
|---|---|---|---|
| 1 Denver Metropolitan | 39,230 | 44,880 | 51,280 |
| 2 Pueblo/Southeastern | 6,400 | 6,800 | 7,130 |
| 3 South Central | 3,300 | 3,050 | 2,720 |
| 4 Western | 7,880 | 7,920 | 7,900 |
| 5 North Central | 4,720 | 5,650 | 6,270 |
| 6 Northeastern | 2,230 | 2,070 | 1,600 |
| 7 Colorado Springs/Eastern | 6,980 | 8,410 | 8,730 |
| Total Colorado | 70,740 | 78,780 | 85,630 |

Table A-3

ESTIMATED NUMBER OF 11TH AND 12TH GRADERS ATTENDING
AREA VOCATIONAL SCHOOLS BY
COMMUNITY COLLEGE ADMINISTRATIVE AREA

| Administrative Area | 1970 | 1975 | 1980 |
|---|---|---|---|
| 1 Denver Metropolitan | 1,960 | 4,490 | 5,130 |
| 2 Pueblo/Southeastern | 320 | 680 | 710 |
| 3 South Central | 160 | 310 | 270 |
| 4 Western | 390 | 790 | 790 |
| 5 North Central | 240 | 560 | 630 |
| 6 Northeastern | 110 | 210 | 160 |
| 7 Colorado Springs/Eastern | 350 | 840 | 870 |
| Total Colorado | 3,530 | 7,880 | 8,560 |

Note: Attendance at area vocational schools is estimated on the basis of 5 percent of the total 11th and 12th graders in 1970, and 10 percent of the total 11th and 12th graders in 1975 and 1980.

Source: MERI.

Table B-1

COMPARISON OF COLORADO POPULATION PROJECTIONS TO 1990
BY STATE AND FEDERAL AGENCIES
(Thousands)

| Year | U.S. Dept. of Commerce Series I-B (highest estimate) | U.S. Dept. of Commerce Series II-D (lowest estimate) | Colorado State Budget Office | Difference Between Highest Population Estimate of U.S. Dept. of Commerce and Colorado Budget Office | Difference Between Lowest Population Estimate of U.S. Dept. of Commerce and Colorado Budget Office |
|---|---|---|---|---|---|
| 1960 | 1,754 | -- | 1,754 | -- | -- |
| 1965 | 1,949 | -- | 1,949 | -- | -- |
| 1967 | -- | -- | 2,015 | -- | -- |
| 1970 | 2,124 | 2,096 | 2,138 | 14 | 42 |
| 1975 | 2,340 | 2,241 | 2,382 | 42 | 141 |
| 1980 | 2,588 | 2,404 | 2,664 | 76 | 260 |
| 1985 | 2,856 | 2,583 | 2,958 | 102 | 375 |
| 1990 | 3,015 | 2,730 | 3,252 | 237 | 522 |

Note: Series I-B projections reflect a moderate decline in the number of births per 1,000 women of childbearing age.

Series II-D projections reflect a substantial drop in the number of births per 1,000 women of childbearing age.

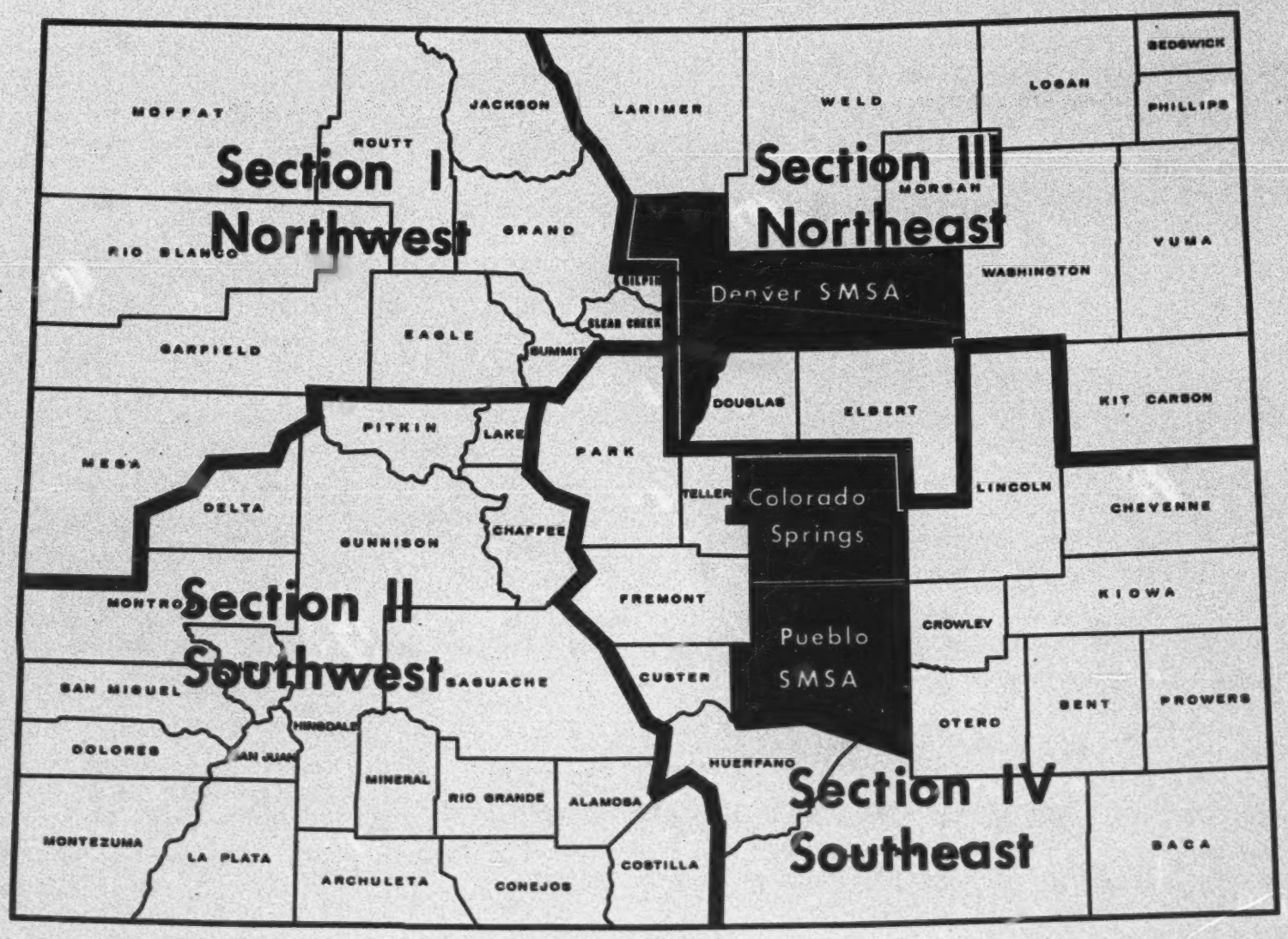
Both Series I and II use past state migration patterns as the basis for making future population estimates.

Sources: Population Estimates, 1970 to 1985 (revised), U.S. Dept. of Commerce, Bureau of the Census, March 7, 1967.

"Population Projections for Colorado Counties 1960-2020," Colorado State Budget Office, February 1967.

## Figure C-1

## COLORADO COUNTY CENSUS SECTIONS




Source: Census sections devised by U.S. Department of Commerce, Bureau of the Census, Census of Population 1960. Vol. 1, Part 7, Colorado, pp. 3-6.

## Appendix D

### EXPLANATION OF METHODOLOGY USED TO PROJECT COLORADO COMMUNITY COLLEGE ENROLLMENTS

### Method A: Participation Rate of Colorado Population

The first approach to projecting enrollments in Colorado community colleges was to extrapolate future enrollments based on the historical trend of participation of the state's general population in day programs offered in existing community colleges. The participation rate was obtained by dividing the total state population into the number of day (full- and part-time) students enrolled in all existing two-year institutions.

The participation rate developed as a result of this procedure merely indicates a statistical relationship between total community college enrollments and total state population--a relationship that does not differentiate between in-state and out-of-state students. Since the attendance at community colleges primarily comprises Colorado residents (approximately 90 percent), this factor does not significantly distort the statistical relationship. The enrollment projections developed by this method assume that out-of-state and foreign student enrollments in Colorado community colleges will not increase drastically over the current level. (Enrollments in two-year programs being offered in four-year institutions were not included in the figure used to derive the annual participation rate for the state.)

The participation rate of the state population in day programs in 1960 was a low 0.19 percent. The trend since then has been rising slowly and steadily, except for the drop in percentage, which was recorded in 1963 when Pueblo Junior College became a four-year institution. In 1967, the participation rate was 0.45 percent of the state population, or more than twice the rate it had been seven years earlier.

In projecting future community college enrollments based on participation rates, MERI assumed that community colleges will continue to increase the proportion of the general population attracted to day academic and occupational programs through active recruitment and counseling efforts in high schools and public information systems. There is a limit on the maximum proportion of state population that can be expected to participate in day programs offered by community colleges; however, the relatively low participation rates prior to 1966 and the anticipated opening of several community colleges in metropolitan areas by 1970 make it reasonable to assume that about 1.0 percent of the state population could be enrolled in community college day programs by 1980. This assumption is based on the experience of other states in respect to participation rates and on the trend in the nation and in Colorado toward an increasingly larger population in the 18 to 21 age bracket (Table D-1).

Table D-1

PROPORTION OF COLORADO POPULATION
IN 18 TO 21 AGE GROUP
1960-1980
(Thousands)

| | Total 18-21 Year Olds | | | | Total 18-21 Year Olds | Percent of Total State Population |
|---|---|---|---|---|---|---|
| Year | 18 Years | 19 Years | 20 Years | 21 Years | | |
| 1960 | 26.5 | 24.2 | 22.9 | 22.8 | 96.3 | 5.5% |
| 1964 | 33.1 | 26.6 | 26.1 | 26.8 | 112.5 | 5.8 |
| 1968 | 38.5 | 37.2 | 36.0 | 36.2 | 147.8 | 7.1 |
| 1972 | 42.9 | 44.0 | 39.8 | 40.2 | 166.8 | 7.5 |
| 1976 | 46.3 | 46.6 | 45.3 | 43.3 | 181.5 | 7.7 |
| 1978 | 48.0 | 46.9 | 45.1 | 45.4 | 185.4 | 7.5 |
| 1980 | 47.6 | 47.1 | 45.2 | 45.9 | 185.8 | 7.2 |

Source: MERI, from "Enrollment Projections for Higher Education 1961-1978," Ronald B. Thompson, September 1961.

It should be noted that while 0.45 percent of the total state population participated in day programs in Colorado's community colleges in 1967, this does not mean that 0.45 percent of the population of all counties was enrolled. The proportion of the county population participating in day programs was much higher in those counties where community colleges are located than in those counties where there are none. The data shown on Table D-2, indicates the participation rate of the population in those counties in which community colleges are located and readily available.

Table D-2

PARTICIPATION RATE OF POPULATION IN SELECTED COUNTIES WHERE COMMUNITY COLLEGES ARE LOCATED

| Community College | Location (County) | Participation Rate |
|---|---|---|
| Trinidad | Las Animas | 3.3% |
| Lamar | Prowers | 2.6 |
| Northeastern | Logan | 2.3 |
| Mesa | Mesa | 1.7 |
| Otero | Otero | 1.1 |
| Rangely | Rio Blanco | 1.1 |

Source: MERI.

While MERI assumed that the state participation rate will increase, it will no doubt fluctuate from year to year. There is no way to predict accurately such fluctuations; therefore, reasonable increases were applied annually between 1968 and 1980. Because several new campuses are to be put into operation in densely populated urban areas during the next three academic years, the greatest anticipated state participation rate increase occurs between 1968 and 1970. Thereafter a more gradual but steady increase will take place until 1980. The results of using the participation method is shown in Table D-3.

Table D-3

COMMUNITY COLLEGE DAY ENROLLMENT PROJECTIONS
IN COLORADO[1/]
1960-1990

| Year | Estimated State Population (nearest thousands)[2/] | Approximate Junior College Day Enrollment (head count) | Participation Rate of General Population in Colorado (percent) |
|---|---|---|---|
| 1960 | 1,754.0 | 3,347 | 0.19% |
| 1961 | 1,835.0 | 4,189 | .23 |
| 1962 | 1,883.0 | 4,555 | .24 |
| 1963 | 1,913.0 | 3,485 | .18 |
| 1964 | 1,936.0 | 4,369 | .23 |
| 1965 | 1,949.0 | 5,918 | .30 |
| 1966 | 2,004.0 | 6,626 | .33 |
| 1967 | 2,015.7 | 9,038 | .45 |
| 1968 | 2,055.0 | 12,330 | .60 |
| 1969 | 2,093.0 | 14,651 | .70 |
| 1970 | 2,131.0 | 17,835 | .34 |
| 1971 | 2,175.0 | 18,648 | .86 |
| 1972 | 2,220.0 | 19,436 | .88 |
| 1973 | 2,260.0 | 20,328 | .90 |
| 1974 | 2,310.0 | 21,800 | .94 |
| 1975 | 2,361.0 | 22,565 | .96 |
| 1976 | 2,415.0 | 23,405 | .97 |
| 1977 | 2,467.0 | 24,245 | .98 |
| 1978 | 2,520.0 | 25,085 | 0.99 |
| 1979 | 2,570.0 | 25,925 | 1.00 |
| 1980 | 2,625.0 | 26,765 | 1.00 |
| 1985 | 2,901.0 | 29,010 | 1.00 |
| 1990 | 3,183.0 | 31,830 | 1.00 |

1/ Based on participation rate of state population.

2/ Estimates of annual state population were derived by straight line interpolation of trend lines between 1967 and 1970; 1970 and 1975; and 1975 and 1980.

Source: State population estimates for 1967 through 1990 derived by MERI from data obtained in "Population Projections for Colorado Counties, 1960-2020," Colorado State Budget Office, February 1967.

## Method B: High School Graduate Progression Rates

The second method used to project community college enrollments in Colorado was based on the progression rates of high school graduates into the 13th and 14th grades. These rates were determined from historical data for the years between 1960 and 1967, and then projected to 1980 based on the Colorado State Department of Education estimates of graduates from public high school plus an adjustment to account for the number of graduates from private and parochial high schools in the state.

The high school graduate progression rate is based on (1) the relationship between the number of high school graduates from public, private, and parochial schools in Colorado and the number of students enrolled in the 13th grade in community colleges the following fall semester and (2) the number of students who progress to the 14th grade one year later. It must be noted that the progression rate is only an indication of the statistical relationships among high school graduates, 13th graders, and 14th graders. These statistical relationships do not mean that the same individuals are necessarily involved. The use of progression rates is a valuable standard tool for projecting school enrollment populations, because such rates reflect the general migration pattern that occurs in a given geographic service area.

Once the number of 13th and 14th graders was determined, the estimated number of unclassified students for each given year was added to arrive at the total annual day enrollment for Colorado community colleges.

The results of this method are shown on Table D-4. The progression rate of high school graduates into the 13th grade of Colorado community colleges has shown a fluctuating but gradual increase despite the setback that occurred when Pueblo Junior College became a four-year institution in 1963. In the fall of 1967, 20 percent of the high school graduates became 13th graders. On the basis of suggestions of the national consultants used by MERI, the progression rate between high school graduates and community college 13th grade was gradually increased annually so that by 1980 it reached 35 percent.

## Table D-4

## DAY ENROLLMENT PROJECTIONS FOR COMMUNITY COLLEGES IN COLORADO
## Fall Term: 1960-1980

| Year | Number of High School Graduates[2] | Day Enrollments 13th Grade Students: Progression Rate | Day Enrollments 13th Grade Students: Number | Day Enrollments 14th Grade Students: Progression Rate | Day Enrollments 14th Grade Students: Number | Number of Unclassified Students | Total Day Enrollments |
|---|---|---|---|---|---|---|---|
| 1960 | 17,242 | 12.1% | 2,092 | 60.8% | 1,115 | 140 | 3,347 |
| 1961 | 18,752 | 14.9 | 2,787 | 50.7 | 1,271 | 131 | 4,189 |
| 1962 | 18,941 | 15.6 | 2,961 | 37.2 | 1,412 | 182 | 4,555 |
| 1963 | 19,297 | 12.1 | 2,334 | 59.0 | 1,102 | 49 | 3,485[3] |
| 1964 | 23,576 | 12.3 | 2,903 | 79.9 | 1,378 | 88 | 4,369 |
| 1965 | 28,596 | 12.5 | 3,597 | 65.8 | 2,321 | n.a. | 5,918 |
| 1966 | 29,457 | 14.5 | 4,260 | 53.2 | 2,366 | n.a. | 6,626 |
| 1967 | 28,877 | 19.9 | 5,764 | 55.0 | 2,265 | 1,009 | 9,038 |
| 1968 | 29,001 | 20.0 | 5,800 | 50.0 | 3,170 | 448 | 9,418 |
| 1969 | 30,816 | 22.0 | 6,780 | 50.0 | 2,900 | 484 | 10,164 |
| 1970 | 31,867 | 24.0 | 7,648 | 50.0 | 3,390 | 551 | 11,589 |
| 1971 | 32,818 | 26.0 | 8,533 | 50.0 | 3,824 | 617 | 12,974 |
| 1972 | 34,111 | 28.0 | 9,551 | 50.0 | 4,267 | 690 | 14,508 |
| 1973 | 34,399 | 29.0 | 9,976 | 50.0 | 4,776 | 738 | 15,490 |
| 1974 | 35,260 | 30.0 | 10,578 | 50.0 | 4,988 | 778 | 16,344 |
| 1975 | 36,121 | 31.0 | 11,197 | 50.0 | 5,289 | 806 | 17,292 |
| 1976 | 36,483 | 32.0 | 11,675 | 50.0 | 5,599 | 864 | 18,138 |
| 1977 | 37,308 | 33.0 | 12,312 | 50.0 | 5,838 | 907 | 19,057 |
| 1978 | 38,882 | 34.0 | 13,220 | 50.0 | 6,156 | 969 | 20,345 |
| 1979 | 37,921 | 35.0 | 13,272 | 50.0 | 6,610 | 994 | 20,876 |
| 1980 | 36,691 | 35.0 | 12,842 | | 6,636 | 973 | 20,451 |

1/ Based on high school graduate progression rates.

2/ Public and private.

3/ Pueblo converted to a four-year institution.

Sources: Public and private high school graduates actual and projected from Pupil Attendance Colorado Public Schools, 1965-66 and 1966-67, State Department of Education, Colorado 1967.

Junior college enrollments from 1960 to 1966 from Community Junior Colleges, State Department of Education, Colorado.

1967 junior college enrollments compiled by MERI from "Fall Report from Community Junior Colleges," October 15, 1967.

Projections developed by MERI.

At the same time that the progression rate has been increasing between high school graduates and the 13th grade, the progression rate between the 13th and 14th grades has been sporadic, ranging from about 37 percent to nearly 80 percent. Upon the advice of our national consultants the progression rate between grades 13 and 14 was maintained at 50 percent until 1980. The number of unclassified students fluctuated drastically during the 1960-67 period. For purposes of making projections, the number of unclassified students in day programs was maintained at about 5 percent of the total enrollment in Colorado community colleges.

## Appendix E

### METHODOLOGY AND RATIONALE FOR ENROLLMENT DISTRIBUTION BY PROPOSED COMMUNITY COLLEGE ADMINISTRATIVE AREA

#### Method A: Participation Rates of County Residents

The projected population for each proposed Community College Administrative Area was computed for selected years between 1967 and 1980 by determining the estimated population, by county, in each of the proposed Community College Administrative Areas. Once this was done, MERI applied reasonable participation rates to each county population, in order to derive the potential number of day students from each county. In counties where community colleges existed, the participation rate used was based on the historical trend of participation rates in that county. After participation rates were applied to each county, the projected enrollments from each county were totaled by Community College Administrative Area. An example of this process is shown in Table E-1.

#### Method B: Progression Rate of High School Graduates

Projected Colorado high school graduates were distributed by county, on the basis of historical trends established between 1960 and 1967. The total number of high school graduates for counties in each proposed Community College Administrative Area were computed for selected years between 1968 and 1980 (see Table E-2). Progression rates were applied to the number of graduates in each Community College Administrative Area to derive the potential 13th grade enrollment in the same manner described for the statewide projection, Method B, in Appendix D.

The potential community college day enrollments in each Community College Administrative Area, derived by Methods A and B, were then plotted so as to give a range of potential day students, in the same way that a range was developed for statewide projections. Once this

was done, each Community College Administrative Area was then carefully analyzed, and the MERI master planning guideline for potential enrollments was determined after consideration was given to the following factors:

1. Availability of community colleges in each area.
2. Historical trends in high school graduate progression rates.
3. Historical trends in general population participation rates.
4. Number and proportion of out-of-state students attending community colleges in each area.
5. Balance between academic and occupational program opportunities in community colleges in the area.
6. General population trends in the counties comprising each area.
7. Population density in urban centers and towns.

This guideline represents the judgment of the MERI staff, after available data were reviewed. A summary of the projected enrollment potential from the residents in each proposed Community College Administrative Area appears in Table E-3.

## Table E-1

## DISTRIBUTION OF COMMUNITY COLLEGE PROJECTED DAY ENROLLMENT* 1980

| Administrative Area and Counties | Population 1967 | Projected Population 1980 | Percent Change 1967-80 | Estimated Participation Rate of County Residents in Community College Day Programs | Estimated Number of Students in 1980 |
|---|---|---|---|---|---|
| **Area 1** | | | | | |
| Adams 1/ | 183.0 | 210.0 | 28.8% | 1.0% | 2,100 |
| Arapahoe 1/ | 139.0 | 189.0 | 36.0 | 1.0 | 1,890 |
| Boulder | 110.0 | 178.0 | 61.8 | 0.5 | 890 |
| Denver | 477.0 | 515.0 | 8.0 | 1.0 | 5,150 |
| Jefferson 1/ | 209.0 | 357.0 | 70.8 | 1.0 | 3,570 |
| Other counties | 12.5 | 27.0 | 116.0 | 0.5 | 135 |
| Total Area 1 | 1,110.5 | 1,476.0 | 32.9% | 0.9% | 13,755 |
| **Area 2** | | | | | |
| Otero 2/ | 26.5 | 25.0 | 0.8% | 1.5% | 375 |
| Prowers 2/ | 13.2 | 13.2 | 0.0 | 1.5 | 200 |
| Pueblo 2/ | 122.9 | 175.0 | 42.4 | 1.0 | 1,750 |
| Other counties | 44.2 | 40.3 | -8.8 | 0.5 | 205 |
| Total Area 2 | 205.1 | 253.5 | 23.6% | 1.0% | 2,530 |
| **Area 3** | | | | | |
| Las Animas 2/ | 16.8 | 14.0 | -16.7% | 3.5% | 490 |
| Other counties | 46.3 | 42.9 | -7.3 | 0.5 | 220 |
| Total Area 3 | 63.1 | 56.9 | -9.8% | 1.0% | 710 |
| **Area 4** | | | | | |
| Delta | 15.3 | 15.0 | -2.0% | 1.0% | 150 |
| Garfield 2/ | 14.0 | 22.0 | 57.1 | 1.5 | 330 |
| Lake 2/ | 9.0 | 10.0 | 11.1 | 3.0 | 300 |
| Mesa 2/ | 53.0 | 70.0 | 32.1 | 2.0 | 1,400 |
| Montrose | 20.5 | 22.0 | 7.3 | 1.0 | 220 |
| Rio Blanco 3/ | 5.0 | 6.5 | 30.0 | 1.5 | 95 |
| Other counties | 46.9 | 48.8 | 4.0 | 0.5 | 255 |
| Subtotal | 163.7 | 194.3 | 18.7% | 1.5% | 2,750 |
| La Plata 3/ | 18.2 | 20.8 | 14.3% | 0.5% | 105 |
| Montezuma 3/ | 13.6 | 15.0 | 10.3 | 0.5 | 75 |
| Other counties 3/ | 7.5 | 6.3 | -16.0 | 0.5 | 40 |
| Subtotal | 39.3 | 42.1 | 7.1% | 0.5% | 220 |
| Total Area 4 | 203.0 | 236.4 | 16.5% | 1.3% | 2,970 |
| **Area 5** | | | | | |
| Larimer | 70.0 | 104.0 | 48.5% | 1.0% | 1,040 |
| Weld 2/ | 81.0 | 98.0 | 21.0 | 1.0 | 980 |
| Total Area 5 | 151.0 | 202.0 | 33.8% | 1.0% | 2,020 |
| **Area 6** | | | | | |
| Logan 2/ | 20.0 | 21.0 | 5.0% | 2.5% | 525 |
| Morgan | 19.4 | 20.7 | 6.7 | 1.0 | 210 |
| Other counties | 22.5 | 20.3 | -9.8 | 0.5 | 105 |
| Total Area 6 | 61.9 | 62.0 | 0.2% | 1.3% | 840 |
| **Area 7** | | | | | |
| El Paso 1/ | 202.0 | 320.0 | 58.4% | 1.2% | 3,840 |
| Other counties | 19.1 | 18.2 | -4.7 | 0.5 | 100 |
| Total Area 7 | 221.1 | 338.2 | 53.0% | 1.2% | 3,940 |
| Total Colorado | 2,015.7 | 2,625.0 | 30.2% | 1.0% | 26,765 |

*Based on population distribution in counties included in proposed Community College Administrative Areas.
1/ Counties with proposed or recommended community colleges by 1970 or shortly thereafter.
2/ Counties with operating community colleges as of fall term 1967.
3/ Four Corners counties.

Source: MSRI.

Table E-2

NUMBER OF ACTUAL AND PROJECTED HIGH SCHOOL GRADUATES IN COLORADO, BY PROPOSED COMMUNITY COLLEGE ADMINISTRATIVE AREAS
Selected Years 1967-1980

| Administrative Area | 1967 | 1968 | 1969 | 1970 | 1975 | 1980 |
|---|---|---|---|---|---|---|
| 1 Denver Metropolitan | 15,165 | 15,261 | 16,558 | 17,213 | 20,301 | 20,685 |
| 2 Pueblo/Southeastern | 2,980 | 3,000 | 3,143 | 3,187 | 3,431 | 3,569 |
| 3 South Central | 1,348 | 1,350 | 1,387 | 1,338 | 1,228 | 1,100 |
| 4 Western | 3,336 | 3,390 | 3,573 | 3,664 | 3,684 | 3,672 |
| 5 North Central | 2,069 | 2,080 | 2,157 | 2,263 | 2,709 | 3,008 |
| 6 Northeastern | 1,099 | 1,070 | 1,048 | 1,052 | 975 | 731 |
| 7 Colorado Springs/ Eastern | 2,880 | 2,850 | 2,950 | 3,150 | 3,793 | 3,936 |
| Total Colorado | 28,877 | 29,001 | 30,816 | 31,867 | 36,121 | 36,691 |

Source: High school graduates projected and distributed by MEII, based on data from "Pupil Attendance, Colorado Public Schools," State Department of Education, 1967.

## Table E-3

## DISTRIBUTION OF PROJECTED DAY ENROLLMENTS BY PROPOSED COMMUNITY COLLEGE ADMINISTRATIVE AREA (Selected Years 1968-1980)

| Administrative Area | Methods Used for Projection | Projected Fall Term Day Enrollment 1968 | 1969 | 1970 | 1975 | 1980 |
|---|---|---|---|---|---|---|
| 1 Denver Metropolitan | A: Population Participation Rate | 6,650 | -- | 8,000 | 11,000 | 13,755 |
| | B: High School Graduate Progression Rate | 4,928 | 5,434 | 6,374 | 9,932 | 11,836 |
| | MERI Guideline | 3,550 | 5,175 | 6,200 | 11,000 | 13,125 |
| 2 Pueblo/Southeastern | A: Population Participation Rate | 1,320 | -- | 2,095 | 2,360 | 2,530 |
| | B: High School Graduate Progression Rate | 1,000 | 1,040 | 1,170 | 1,650 | 1,850 |
| | MERI Guideline | 1,760 | 1,925 | 2,035 | 2,200 | 2,310 |
| 3 South Central | A: Population Participation Rate | 350 | -- | 765 | 765 | 710 |
| | B: High School Graduate Progression Rate | 420 | 435 | 450 | 450 | 425 |
| | MERI Guideline | 925 | 1,000 | 1,200 | 1,200 | 1,150 |
| 4 Western | A: Population Participation Rate | 1,320 | -- | 2,380 | 2,650 | 2,970 |
| | B: High School Graduate Progression Rate | 1,100 | 1,175 | 1,275 | 1,750 | 1,955 |
| | MERI Guideline | 1,815 | 1,980 | 2,090 | 2,350 | 2,800 |
| 5 North Central | A: Population Participation Rate | 985 | -- | 1,520 | 1,820 | 2,020 |
| | B: High School Graduate Progression Rate | 700 | 750 | 805 | 1,225 | 1,760 |
| | MERI Guideline | 1,200 | 1,350 | 1,575 | 1,785 | 1,955 |
| 6 Northeastern | A: Population Participation Rate | 405 | -- | 925 | 970 | 840 |
| | B: High School Graduate Progression Rate | 340 | 350 | 385 | 470 | 420 |
| | MERI Guideline | 715 | 770 | 825 | 970 | 925 |
| 7 Colorado Springs/Eastern | A: Population Participation Rate | 1,300 | -- | 2,150 | 3,000 | 3,940 |
| | B: High School Graduate Progression Rate | 930 | 980 | 1,130 | 1,815 | 2,205 |
| | MERI Guideline | 500 | 650 | 1,100 | 2,100 | 4,200 |
| Total Colorado | A: Population Participation Rate | 12,330 | 14,651 | 17,835 | 22,565 | 26,765 |
| | B: High School Graduate Progression Rate | 9,418 | 10,164 | 11,589 | 17,292 | 20,451 |
| | MERI Guideline | 10,465 | 12,850 | 15,025 | 21,605 | 26,465 |

Source: MERI.

Table F-1

COMPARISON OF POPULATION PROJECTIONS
FOR DENVER SMSA

| Year | State Budget Office[1] | Denver Planning Office[2] | Mountain State Telephone Company[3] | Inter-County Regional Planning Commission[4] | Difference Between Highest and Lowest Estimates |
|---|---|---|---|---|---|
| 1960 | 949,383 | -- | -- | 929,400 | 19,983 |
| 1965 | -- | -- | 1,074,000 | 1,074,000 | -- |
| 1966 | 1,076,000 | -- | -- | -- | -- |
| 1970 | 1,165,000** | 1,275,000* | 1,232,000 | 1,252,000 | 110,000 |
| 1975 | 1,297,000** | 1,400,000 | -- | 1,471,500* | 174,500 |
| 1980 | 1,449,000** | 1,600,000 | 1,590,000 | 1,725,000* | 276,000 |
| 1985 | -- | -- | -- | 2,014,600 | -- |
| 1990 | 1,756,000 | -- | -- | -- | -- |

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* Denotes highest estimate.
** Denotes lowest estimate.

1/ "Population Projection for Colorado Counties 1960-2020," State Budget Office, February 1967.

2/ "Residential Land Use Plan," Denver Planning Office, January 1966. (Does not include Boulder County in population projections.)

3/ "A Profile of Denver," Mountain States Telephone Company, 1967.

4/ "Economic Growth in the Denver SMSA 1965-1985," Inter-County Regional Planning Commission, August 1967.

## Appendix G

## ASSUMPTIONS AND PROCEDURES USED TO DETERMINE TOTAL DAY ENROLLMENTS AND DISTRIBUTION IN DENVER COMMUNITY COLLEGE SYSTEM (Fall Term, Selected Years 1968-1980)

### Planning Assumptions for Denver Community College Enrollments

Because of the complex elements affecting community college enrollments, the following planning assumptions were made in the projection and distribution of enrollments in the Denver Metropolitan Area. These are in addition to the general assumptions that have already been stated regarding the distribution of Colorado Community College enrollments in each of the proposed Community College Administrative Areas.

1. The first Denver Community College will open in the fall of 1968 in a location in Adams County to the north of central Denver; and the second campus will open in the fall of 1969 in a westerly direction from central Denver in Jefferson County.

2. The site of the third campus in 1970, while not yet determined, will be situated in a location most appropriate to serve those areas of Denver County and the southern and southeastern portions of the Denver Community College Administrative Area not conveniently served by the first two Denver Community College sites.

3. The first year of operation at each newly opened campus will be essentially limited to the 13th grade.

4. Potential students from the Denver area will attend the community college closest to the location of their home, except in cases where a desired program is offered only at another campus.

5. Occupational programs will be offered at each campus of Denver Community College so that no single campus will become overwhelmingly occupational or academic in orientation. This does not mean that all campuses will necessarily offer an identical curriculum.

6. The occupational programs requiring less than a baccalaureate degree currently being offered at Metropolitan State College will be transferred to Denver Community College by 1975, except in instances where such programs are determined to be most advantageously located at Metropolitan State.

On the basis of the foregoing assumptions, distribution of the potential number of students among the various campuses of the Denver Community College system was made for the fall term of each academic year between 1968 and 1970, and for the fall terms of 1975 and 1980.

Procedures for Determining Day Enrollments at Denver Community College

The first step in this procedure was to distribute projected high school graduates in each of the principal counties to be served by the Denver Community College system to 1980. Patterns of growth in each county in the Denver SMSA were determined through the use of cohort progression rates of live births through high school graduation. Chronological survival rates were developed by county for (1) live births to 3rd grade, (2) 3rd grade to 10th grade, (3) 10th grade to high school graduation. The cohort survival of the total live births in 1942 was traced through the 3rd grade in 1950, the 10th grade in 1957, and high school graduation in 1960. The same was done for live births for each successive year through 1962.

See Table G-1 for the detailed analysis of the cohort progression rate in each of the five counties in the Denver SMSA. The number of high school graduates in the other counties tentatively served by Denver Community College was estimated on the basis of school enrollments and population trends in each county. From these data, progression rates from

high school graduation to entering 13th grade in Denver Community Colleges and Arapahoe Junior College were developed for selected years between 1968 and 1980. The projected number of high school graduates in each county served by the Denver Community College system is summarized in Table G-2, and the projected number of entering 13th graders is shown on Table G-3.

The estimated number of 13th and 14th graders attending community college programs from each county in the Denver Community College Administrative Area is summarized on Table G-4. The total number of potential enrollments in each county was determined by adding the number of 13th graders for each selected year (based on progression of high school graduates) and the estimated number of 14th graders (based on 50 percent of the previous year's entering 13th grade).

The total estimated number of unclassified students in the Denver Community College system was set at about 8 percent of the total day enrollment, and distributed among the colleges on the basis of the size of the 13th and 14th grades.

Once the total number of students attending community colleges in the Denver Community College Administrative Area was determined, they were distributed to each of the campuses. (The number of campuses used to distribute enrollments depended on the assumption used regarding Arapahoe Junior College. Four campuses were used when it was assumed that Arapahoe would stay out of the state system; three campuses were used when it was assumed that Arapahoe would join the state system by 1970.)

Essentially the enrollment distribution was made on the basis of having 75 to 85 percent of the students attend the community college located in their home county. In counties where no permanent campus site is anticipated, the majority of students were assigned to campus locations closest to their county of residence; however, main automobile transportation arteries were also considered in the assignment of students to community colleges outside of their home county.

Table G-1

COHORT PROGRESSION FROM BIRTH TO 3RD GRADE,
TO 10TH GRADE, TO HIGH SCHOOL GRADUATION
TO 13TH GRADE IN COMMUNITY COLLEGE
1942-1962

ADAMS COUNTY

| Year of Birth | Number of Births | Year Births Enter 3rd Grade | Number of 3rd Graders | Percent of Births to 3rd Grade | Year Births Enter 10th Grade | Number of 10th Graders | Percent of 3rd Grade to Enter 10th Grade | Year Births Graduate from High School | Number of High School Graduates | Percent of 10th Grade to Graduate from High School |
|---|---|---|---|---|---|---|---|---|---|---|
| 1942 | 487 | 1950 | 644 | 132% | 1957 | 990 | 154% | 1960 | 802 | 81% |
| 1943 | 536 | 1951 | 790 | 147 | 1958 | 1,198 | 152 | 1961 | 923 | 77 |
| 1944 | 469 | 1952 | 814 | 174 | 1959 | 1,233 | 151 | 1962 | 968 | 78 |
| 1945 | 465 | 1953 | 832 | 179 | 1960 | 1,336 | 161 | 1963 | 1,041 | 78 |
| 1946 | 632 | 1954 | 1,116 | 177 | 1961 | 1,668 | 150 | 1964 | 1,364 | 82 |
| 1947 | 776 | 1955 | 1,571 | 202 | 1962 | 2,294 | 146 | 1965 | 1,853 | 81 |
| 1948 | 953 | 1956 | 1,857 | 195 | 1963 | 2,442 | 130 | 1966 | 1,900 | 78 |
| 1949 | 1,054 | 1957 | 1,933 | 183 | 1964 | 2,470 | 128 | 1967 | 1,950 | 79 |
| 1950 | 1,217 | 1958 | 2,239 | 184 | 1965 | 2,521 | 113 | 1968 | 2,015 | 80 |
| 1951 | 1,364 | 1959 | 2,613 | 192 | 1966 | 2,969 | 102 | 1969 | 2,375 | 80 |
| 1952 | 1,450 | 1960 | 2,965 | 204 | 1967 | 3,115 | 105 | 1970 | 2,550 | 81 |
| 1953 | 1,513 | 1961 | 3,134 | 207 | 1968 | 3,450 | 110 | 1971 | 2,655 | 81 |
| 1954 | 1,659 | 1962 | 3,520 | 212 | 1969 | 3,870 | 110 | 1972 | 3,180 | 82 |
| 1955 | 1,991 | 1963 | 3,550 | 178 | 1970 | 3,950 | 105 | 1973 | 3,210 | 82 |
| 1956 | 2,743 | 1964 | 3,758 | 137 | 1971 | 3,760 | 100 | 1974 | 3,260 | 83 |
| 1957 | 2,862 | 1965 | 3,978 | 139 | 1972 | 3,980 | 100 | 1975 | 3,350 | 84 |
| 1958 | n.a. | 1966 | 4,165 | - | 1973 | 4,165 | 100 | 1976 | 3,530 | 85 |
| 1959 | n.a. | 1967 | 4,430 | - | 1974 | 4,430 | 100 | 1977 | 3,765 | 85 |
| 1960 | 3,744 | 1968 | 4,870 | 130 | 1975 | 4,870 | 100 | 1978 | 4,140 | 85 |
| 1961 | 4,096 | 1969 | 5,325 | 130 | 1976 | 5,325 | 100 | 1979 | 4,530 | 85 |
| 1962 | 3,974 | 1970 | 5,245 | 132 | 1977 | 5,245 | 100 | 1980 | 4,465 | 85 |

Table G-1 (Cont.)

ARAPAHOE COUNTY

| Year of Birth | Number of Births | Year Births Enter 3rd Grade | Number of 3rd Graders | Percent of Births to 3rd Grade | Year Births Enter 10th Grade | Number of 10th Graders | Percent of 3rd Grade to Enter 10th Grade | Year Births Graduate from High School | Number of High School Graduates | Percent of 10th Grade to Graduate from High School |
|---|---|---|---|---|---|---|---|---|---|---|
| 1942 | 848 | 1950 | 1,051 | 124% | 1957 | 1,466 | 139% | 1960 | 1,248 | ≈ 85% |
| 1943 | 897 | 1951 | 1,300 | 145 | 1958 | 1,735 | 134 | 1961 | 1,494 | 86 |
| 1944 | 892 | 1952 | 1,396 | 157 | 1959 | 1,724 | 123 | 1962 | 1,473 | 85 |
| 1945 | 962 | 1953 | 1,534 | 159 | 1960 | 1,932 | 126 | 1963 | 1,640 | 85 |
| 1946 | 1,268 | 1954 | 1,885 | 149 | 1961 | 2,318 | 123 | 1964 | 2,010 | 87 |
| 1947 | 1,183 | 1955 | 1,302 | 195 | 1962 | 2,778 | 121 | 1965 | 2,493 | 90 |
| 1948 | 1,299 | 1956 | 2,383 | 183 | 1963 | 2,890 | 121 | 1966 | 2,600 | 90 |
| 1949 | 1,547 | 1957 | 2,450 | 158 | 1964 | 3,086 | 126 | 1967 | 2,780 | 90 |
| 1950 | 1,612 | 1958 | 2,323 | 157 | 1965 | 2,861 | 113 | 1968 | 2,575 | 90 |
| 1951 | 1,888 | 1959 | 2,885 | 153 | 1966 | 3,370 | 117 | 1969 | 3,000 | 90 |
| 1952 | 2,042 | 1960 | 3,173 | 155 | 1967 | 3,650 | 115 | 1970 | 3,250 | 90 |
| 1953 | 2,268 | 1961 | 3,340 | 147 | 1968 | 3,775 | 113 | 1971 | 3,360 | 90 |
| 1954 | 2,319 | 1962 | 3,499 | 151 | 1969 | 3,920 | 112 | 1972 | 3,490 | 90 |
| 1955 | 2,291 | 1963 | 3,640 | 159 | 1970 | 4,000 | 110 | 1973 | 3,560 | 90 |
| 1956 | 2,396 | 1964 | 3,824 | 160 | 1971 | 4,210 | 110 | 1974 | 3,790 | 90 |
| 1957 | 2,377 | 1965 | 3,816 | 161 | 1972 | 4,200 | 110 | 1975 | 3,780 | 90 |
| 1958 | n.a. | 1966 | 3,895 | -- | 1973 | 4,285 | 110 | 1976 | 3,855 | 90 |
| 1959 | n.a. | 1967 | 3,950 | -- | 1974 | 4,345 | 110 | 1977 | 3,910 | 90 |
| 1960 | 2,916 | 1968 | 4,080 | 140 | 1975 | 4,490 | 110 | 1978 | 4,040 | 90 |
| 1961 | 3,156 | 1969 | 4,420 | 140 | 1976 | 4,650 | 105 | 1979 | 4,375 | 90 |
| 1962 | 3,006 | 1970 | 4,210 | 140 | 1977 | 4,430 | 105 | 1980 | 4,175 | 90 |

Table G-1 (Contd.)

BOULDER COUNTY

| Year of Birth | Number of Births | Year Births Enter 3rd Grade | Number of 3rd Graders | Percent of Births to 3rd Grade | Year Births Enter 10th Grade | Number of 10th Graders | Percent of 3rd Grade to Enter 10th Grade | Year Births Graduate from High School | Number of High School Graduates | Percent of 10th Grade to Graduate from High School |
|---|---|---|---|---|---|---|---|---|---|---|
| 1942 | 639 | 1950 | 636 | 100% | 1957 | 856 | 134% | 1960 | 752 | 88% |
| 1943 | 635 | 1951 | 685 | 108 | 1958 | 874 | 128 | 1961 | 834 | 95 |
| 1944 | 688 | 1952 | 726 | 106 | 1959 | 922 | 127 | 1962 | 888 | 96 |
| 1945 | 672 | 1953 | 706 | 105 | 1960 | 998 | 141 | 1963 | 913 | 91 |
| 1946 | 955 | 1954 | 786 | 82 | 1961 | 1,181 | 150 | 1964 | 1,106 | 94 |
| 1947 | 1,152 | 1955 | 963 | 84 | 1962 | 1,500 | 156 | 1965 | 1,408 | 94 |
| 1948 | 1,159 | 1956 | 987 | 85 | 1963 | 1,460 | 148 | 1966 | 1,360 | 93 |
| 1949 | 1,167 | 1957 | 1,076 | 92 | 1964 | 1,583 | 147 | 1967 | 1,490 | 94 |
| 1950 | 1,080 | 1958 | 1,129 | 105 | 1965 | 1,623 | 144 | 1968 | 1,515 | 93 |
| 1951 | 1,178 | 1959 | 1,234 | 105 | 1966 | 1,787 | 145 | 1969 | 1,680 | 94 |
| 1952 | 1,170 | 1960 | 1,477 | 126 | 1967 | 2,085 | 142 | 1970 | 1,960 | 94 |
| 1953 | 1,149 | 1961 | 1,599 | 139 | 1968 | 2,240 | 140 | 1971 | 2,100 | 94 |
| 1954 | 1,215 | 1962 | 1,715 | 141 | 1969 | 2,315 | 135 | 1972 | 2,175 | 94 |
| 1955 | 1,312 | 1963 | 1,758 | 135 | 1970 | 2,290 | 130 | 1973 | 2,150 | 94 |
| 1956 | 1,406 | 1964 | 1,848 | 131 | 1971 | 2,390 | 130 | 1974 | 2,240 | 94 |
| 1957 | 1,620 | 1965 | 2,067 | 128 | 1972 | 2,580 | 125 | 1975 | 2,425 | 94 |
| 1958 | n.a. | 1966 | 2,174 | -- | 1973 | 2,610 | 120 | 1976 | 2,450 | 94 |
| 1959 | n.a. | 1967 | 2,270 | -- | 1974 | 2,720 | 120 | 1977 | 2,555 | 94 |
| 1960 | 1,868 | 1968 | 2,390 | 128 | 1975 | 2,820 | 118 | 1978 | 2,650 | 94 |
| 1961 | 1,950 | 1969 | 2,440 | 125 | 1976 | 2,880 | 118 | 1979 | 2,730 | 94 |
| 1962 | 2,034 | 1970 | 2,540 | 125 | 1977 | 3,000 | 118 | 1980 | 2,850 | 94 |

Table G-1 (Contd.)

DENVER CITY AND COUNTY

| Year of Birth | Number of Births | Year Births Enter 3rd Grade | Number of 3rd Graders | Percent of Births to 3rd Grade | Year Births Enter 10th Grade | Number of 10th Graders | Percent of 3rd Grade to Enter 10th Grade | Year Births Graduate from High School | Number of High School Graduates | Percent of 10th Grade to Graduate from High School |
|---|---|---|---|---|---|---|---|---|---|---|
| 1942 | 7,399 | 1950 | 4,950 | 67% | 1957 | 4,800 | 97% | 1960 | 4,060 | 85% |
| 1943 | 7,580 | 1951 | 5,802 | 77 | 1958 | 4,670 | 80 | 1961 | 4,394 | 94 |
| 1944 | 7,463 | 1952 | 5,763 | 77 | 1959 | 4,475 | 78 | 1962 | 4,283 | 96 |
| 1945 | 7,551 | 1953 | 5,661 | 75 | 1960 | n.a. | -- | 1963 | 4,267 | -- |
| 1946 | 9,421 | 1954 | 7,055 | 75 | 1961 | 5,931 | 84 | 1964 | 5,258 | 89 |
| 1947 | 10,432 | 1955 | 8,317 | 80 | 1962 | 6,961 | 84 | 1965 | 6,137 | 88 |
| 1948 | 10,311 | 1956 | 8,178 | 79 | 1963 | 6,924 | 85 | 1966 | 5,950 | 86 |
| 1949 | 10,137 | 1957 | 7,226 | 71 | 1964 | 6,814 | 94 | 1967 | 5,860 | 86 |
| 1950 | 10,440 | 1958 | 7,378 | 71 | 1965 | 6,959 | 94 | 1968 | 5,985 | 8C |
| 1951 | 10,955 | 1959 | 7,547 | 69 | 1966 | 7,310 | 97 | 1969 | 6,285 | 86 |
| 1952 | 11,202 | 1960 | 8,003 | 71 | 1967 | 7,155 | 89 | 1970 | 6,135 | 86 |
| 1953 | 11,432 | 1961 | 7,837 | 69 | 1968 | 6,975 | 89 | 1971 | 6,070 | 87 |
| 1954 | 11,544 | 1962 | 7,891 | 68 | 1969 | 6,945 | 88 | 1972 | 6,040 | 87 |
| 1955 | 11,669 | 1963 | 7,797 | 67 | 1970 | 6,860 | 88 | 1973 | 5,970 | 87 |
| 1956 | 11,950 | 1964 | 7,550 | 63 | 1971 | 6,645 | 88 | 1974 | 5,785 | 87 |
| 1957 | 12,103 | 1965 | 7,553 | 62 | 1972 | 6,650 | 88 | 1975 | 5,790 | 87 |
| 1958 | 11,959 | 1966 | 7,311 | 61 | 1973 | 6,370 | 87 | 1976 | 5,595 | 87 |
| 1959 | 11,859 | 1967 | 7,531 | 64 | 1974 | 6,550 | 87 | 1977 | 5,700 | 87 |
| 1960 | 11,971 | 1968 | 7,540 | 63 | 1975 | 6,560 | 87 | 1978 | 5,705 | 87 |
| 1961 | 12,293 | 1969 | 7,620 | 62 | 1976 | 6,630 | 87 | 1979 | 5,770 | 87 |
| 1962 | 11,634 | 1970 | 7,215 | 62 | 1977 | 6,280 | 87 | 1980 | 5,065 | 87 |

Table G-1 (Contd.)

JEFFERSON COUNTY

| Year of Birth | Number of Births | Year Births Enter 3rd Grade | Number of 3rd Graders | Percent of Births to 3rd Grade | Year Births Enter 10th Grade | Number of 10th Graders | Percent of 3rd Grade to Enter 10th Grade | Year Births Graduate from High School | Number of High School Graduates | Percent of 10th Grade to Graduate from High School |
|---|---|---|---|---|---|---|---|---|---|---|
| 1942 | 651 | 1950 | 1,113 | 171% | 1957 | 1,502 | 135% | 1960 | 1,223 | 81% |
| 1943 | 667 | 1951 | 1,236 | 185 | 1958 | 1,770 | 143 | 1961 | 1,506 | 85 |
| 1944 | 683 | 1952 | 1,325 | 194 | 1959 | 1,874 | 141 | 1962 | 1,594 | 85 |
| 1945 | 708 | 1953 | 1,329 | 188 | 1960 | n.a. | -- | 1963 | 1,703 | -- |
| 1946 | 1,003 | 1954 | 1,507 | 150 | 1961 | 2,463 | 163 | 1964 | 2,120 | 86 |
| 1947 | 1,092 | 1955 | 2,058 | 188 | 1962 | 3,122 | 152 | 1965 | 2,755 | 88 |
| 1948 | 1,211 | 1956 | 2,098 | 173 | 1963 | 3,299 | 157 | 1966 | 2,760 | 84 |
| 1949 | 1,307 | 1957 | 2,130 | 163 | 1964 | 3,336 | 157 | 1967 | 2,870 | 86 |
| 1950 | 1,470 | 1958 | 2,327 | 158 | 1965 | 3,486 | 150 | 1968 | 2,995 | 86 |
| 1951 | 1,590 | 1959 | 2,615 | 164 | 1966 | 3,875 | 148 | 1969 | 3,295 | 85 |
| 1952 | 1,788 | 1960 | 2,900 | 162 | 1967 | 4,175 | 144 | 1970 | 3,550 | 85 |
| 1953 | 1,858 | 1961 | 3,276 | 176 | 1968 | 4,650 | 142 | 1971 | 3,950 | 85 |
| 1954 | 1,931 | 1962 | 3,611 | 187 | 1969 | 5,055 | 140 | 1972 | 4,295 | 85 |
| 1955 | 2,213 | 1963 | 4,006 | 181 | 1970 | 5,610 | 140 | 1973 | 4,765 | 85 |
| 1956 | 2,447 | 1964 | 4,053 | 166 | 1971 | 5,670 | 140 | 1974 | 4,875 | 86 |
| 1957 | 2,509 | 1965 | 3,886 | 155 | 1972 | 5,440 | 140 | 1975 | 4,665 | 86 |
| 1958 | n.a. | 1966 | 4,427 | -- | 1973 | 6,140 | 138 | 1976 | 5,280 | 86 |
| 1959 | n.a. | 1967 | 4,680 | -- | 1974 | 6,360 | 136 | 1977 | 5,470 | 86 |
| 1960 | 3,291 | 1968 | 4,800 | 145 | 1975 | 6,630 | 136 | 1978 | 5,700 | 86 |
| 1961 | 3,769 | 1969 | 5,400 | 140 | 1976 | 7,200 | 132 | 1979 | 6,190 | 86 |
| 1962 | 4,111 | 1970 | 5,700 | 140 | 1977 | 7,400 | 130 | 1980 | 6,365 | 86 |

Sources: Live birth data, Colorado State Department of Health. Actual 3rd grade, 10th grade enrollments, and high school graduates, Colorado State Department of Education. Projections by MERI.

## Table G-1 (Contd.)

DENVER CITY AND COUNTY

| Year of Birth | Number of Births | Year Births Enter 3rd Grade | Number of 3rd Graders | Percent of Births to 3rd Grade | Year Births Enter 10th Grade | Number of 10th Graders | Percent of 3rd Grade to Enter 10th Grade | Year Births Graduate from High School | Number of High School Graduates | Percent of 10th Grade to Graduate from High School |
|---|---|---|---|---|---|---|---|---|---|---|
| 1942 | 7,399 | 1950 | 4,950 | 67% | 1957 | 4,800 | 97% | 1960 | 4,060 | 85% |
| 1943 | 7,580 | 1951 | 5,802 | 77 | 1958 | 4,670 | 80 | 1961 | 4,394 | 94 |
| 1944 | 7,463 | 1952 | 5,763 | 77 | 1959 | 4,475 | 78 | 1962 | 4,283 | 96 |
| 1945 | 7,551 | 1953 | 5,661 | 75 | 1960 | n.a. | -- | 1963 | 4,267 | -- |
| 1946 | 9,421 | 1954 | 7,055 | 75 | 1961 | 5,931 | 84 | 1964 | 5,258 | 89 |
| 1947 | 10,432 | 1955 | 8,317 | 80 | 1962 | 6,961 | 84 | 1965 | 6 137 | 88 |
| 1948 | 10,311 | 1956 | 8,178 | 79 | 1963 | 6,924 | 85 | 1966 | 5,950 | 86 |
| 1949 | 10,137 | 1957 | 7,226 | 71 | 1964 | 6,814 | 94 | 1967 | 5,860 | 86 |
| 1950 | 10,440 | 1958 | 7,378 | 71 | 1965 | 6,959 | 94 | 1968 | 5,985 | 86 |
| 1951 | 10,955 | 1959 | 7,547 | 69 | 1966 | 7,310 | 97 | 1969 | 6,285 | 86 |
| 1952 | 11,202 | 1960 | 8,003 | 71 | 1967 | 7,155 | 89 | 1970 | 6,155 | 86 |
| 1953 | 11,432 | 1961 | 7,837 | 69 | 1968 | 6,975 | 89 | 1971 | 6,070 | 87 |
| 1954 | 11,544 | 1962 | 7,891 | 68 | 1969 | 6,945 | 88 | 1972 | 6,040 | 87 |
| 1955 | 11,669 | 1963 | 7,797 | 67 | 1970 | 6,860 | 88 | 1973 | 5,970 | 87 |
| 1956 | 11,950 | 1964 | 7,550 | 63 | 1971 | 6,645 | 88 | 1974 | 5,785 | 87 |
| 1957 | 12,103 | 1965 | 7,553 | 62 | 1972 | 6,650 | 88 | 1975 | 5,790 | 87 |
| 1958 | 11,959 | 1966 | 7,311 | 61 | 1973 | 6,370 | 87 | 1976 | 5,595 | 87 |
| 1959 | 11,859 | 1967 | 7,531 | 64 | 1974 | 6,550 | 87 | 1977 | 5,700 | 87 |
| 1960 | 11,971 | 1968 | 7,540 | 63 | 1975 | 6,560 | 87 | 1978 | 5,705 | 87 |
| 1961 | 12,293 | 1969 | 7,620 | 62 | 1976 | 6,630 | 87 | 1979 | 5,770 | 87 |
| 1962 | 11,634 | 1970 | 7,215 | 62 | 1977 | 6,290 | 87 | 1980 | 5,065 | 87 |

Table G-2

NUMBER OF HIGH SCHOOL GRADUATES, BY COUNTY, IN DENVER COMMUNITY COLLEGE ADMINISTRATIVE AREA (Selected Years--1968-19[illegible])

| | County | | | | | | |
|---|---|---|---|---|---|---|---|
| Year | Adams | Arapahoe | Boulder | Denver | Jefferson | Other CCAA[1/] Counties | Total |
| 1968 | 2,015 | 2,575 | 1,515 | 5,985 | 2,995 | 216 | 15,301 |
| 1969 | 2,375 | 3,000 | 1,680 | 6,28[illegible] | 3,295 | 201 | 16,836 |
| 1970 | 2,550 | 3,250 | 1,960 | 6,155 | 3,550 | 267 | 17,732 |
| 1975 | 3,350 | 3,780 | 2,425 | 5,790 | 4,665 | 275 | 20,285 |
| 1980 | 4,465 | 4,175 | 2,850 | 5,065 | 6,365 | 260 | 23,180 |

1/ Community College Administrative Area.

Source: MERI Master Planning Guideline.

Table G-3

ESTIMATED NUMBER OF ENTERING 13TH GRADERS,
BY COUNTY, IN DENVER COMMUNITY COLLEGE
ADMINISTRATIVE AREA
(Selected Years--1968-1980)

| Year | Progression Rate (Percent) | County | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Adams | Arapahoe | Boulder | Denver | Jefferson | Other CCAA[1/] Counties | Total |
| 1968 | 20% | 405 | 515 | 305 | 1,200 | 600 | 40 | 3,065 |
| 1969 | 22 | 520 | 660 | 370 | 1,380 | 725 | 40 | 3,695 |
| 1970 | 24 | 610 | 780 | 470 | 1,475 | 850 | 60 | 4,245 |
| 1975 | 31 | 1,050 | 1,200 | 1,000 | 1,800 | 1,500 | 100 | 6,500 |
| 1980 | 35 | 1,550 | 1,450 | 1,200 | 1,770 | 2,140 | 90 | 8,200 |

1/ Community College Administrative Area.

Source: MERI Master Planning Guideline.

Table G-4

ESTIMATED NUMBER OF STUDENTS ATTENDING COMMUNITY COLLEGE PROGRAMS IN THE DENVER AREA,[1] BY COUNTY

| Year | Unclassified Students[2] | County | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Adams | Arapahoe | Boulder | Denver | Jefferson | Other CCAA[3] Counties | Total Enrollment |
| 1968 | -- | 405 | 1,000 | 305 | 1,200 | 600 | 40 | 3,550 |
| 1969 | -- | 720 | 910 | 515 | 1,780 | 1,015 | 65 | 5,175 |
| 1970 | -- | 890 | 1,130 | 675 | 2,185 | 1,230 | 90 | 6,200 |
| 1975 | 900 | 1,600 | 1,900 | 1,500 | 2,650 | 2,300 | 150 | 11,000 |
| 1980 | 1,100 | 2,250 | 2,100 | 1,800 | 2,620 | 3,125 | 130 | 13,125 |

1/ These figures are estimated 13th and 14th graders residing in each county, based on the number of high school graduates in each county.

2/ No attempt was made to determine the county of residence of unclassified students in 1975 and 1980. These were distributed to each community college on the basis of the size of 13th and 14th grade enrollments.

3/ Community College Administrative Area.

Source: MERI Master Planning Guideline.